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# FEDERAL REGISTER

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Interstate Commerce Commission

# Explosives and Other Dangerous Articles

# Revision of Regulations

# Title 49—TRANSPORTATION

## Chapter I—Interstate Commerce Commission

### SUBCHAPTER A—GENERAL RULES AND REGULATIONS

## PARTS 71–90—EXPLOSIVES AND OTHER DANGEROUS ARTICLES

### Revision and Republication

Because of the numerous amendments, Parts 71–90 of Title 49 are revised and republished for convenience. This revision contains all amendments which have been published in the FEDERAL REGISTER to date.

Part

71 General information and regulations.
72 Commodity list of explosives and other dangerous articles containing the shipping name or description of all articles subject to Parts 71–78 of this chapter.
73 Shippers.
74 Carriers by rail freight.
75 Carriers by rail express.
76 Rail carriers in baggage service.
77 Shipments made by way of common contract, or private carriers by public highway.
78 Shipping container specifications.
79 Specifications for tank cars.
80–90 [Reserved]

## PARTS 71–79: EXPLOSIVES AND OTHER DANGEROUS ARTICLES

CROSS REFERENCE: For transportation of explosives and other dangerous articles by air, see 14 CFR Part 49. For U.S. Coast Guard dangerous cargo regulations, see 46 CFR Parts 146 and 147.

## PART 71—GENERAL INFORMATION AND REGULATIONS

Sec.

71.1 Plan of the regulations in Parts 71–78 of this chapter.
71.2 Act of Congress.
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71.11 Transportation by carriers by water.
71.12 Export shipments by domestic carriers by rail and motor vehicles.
71.13 Emergency regulations.

AUTHORITY: The provisions of this Part 71 issued under 62 Stat. 738, 74 Stat. 808; 18 U.S.C. 834.

### § 71.1 Plan of the regulations in Parts 71–78 of this chapter.

(a) Regulations in Parts 71–78 of this chapter cover preparation of explosives and other dangerous articles for transportation by common carriers by rail freight, rail express, rail baggage, highway or water, construction of containers, packaging, weight, marking, labeling when required, billing, and shipper's certificate of compliance with these regulations; also cars, loading, storage, billing, placarding, and movement thereof by carriers by rail.

(b) Regulations for equipment and operation of motor vehicles on the highways are published in separate issue of the Commission.

### § 71.2 Act of Congress.

(a) Section 833, Title 18 of the United States Code, approved September 6, 1960 (Pub. Law 710, 86th Congress), which amended the act approved June 25, 1948 (Pub. Law 772, 80th Congress), provides that "Any person who knowingly delivers to any carrier engaged in interstate or foreign commerce by land or water, and any person who knowingly carries on or in any car or vehicle of any description operated in the transportation of passengers or property by any carrier engaged in interstate or foreign commerce by land, any explosive, or other dangerous article, specified in or designated by the Interstate Commerce Commission pursuant to section 834 of this chapter, under any false or deceptive marking, description, invoice, shipping order, or other declaration, or any person who so delivers any such article without informing such carrier in writing of the true character thereof, at the time such delivery is made, or without plainly marking on the outside of every package containing explosives or other dangerous articles the contents thereof, if such marking is required by regulations prescribed by the Interstate Commerce Commission, shall be fined" or imprisoned, as provided in the Act.

### § 71.3 Changes in the regulations, shippers by rail, highway, and water, and carriers by rail and highway.

(a) Section 834 of the act of September 6, 1960, authorizes the Commission to formulate regulations for the safe transportation of explosives and other dangerous articles and, either upon its own motion or upon application by any interested party, to make changes or modifications in such regulations made desirable by new information or altered conditions. It further provides that in the execution of sections 831–835 of the act the Commission may utilize the services of carrier and shipper associations, including the Bureau for the Safe Transportation of Explosives and other Dangerous Articles (hereafter called Bureau of Explosives). The Bureau of Explosives will make inspections and conduct investigations and will confer with manufacturers and shippers with a view to determining what regulations will within reasonable limits afford the highest degree of safety in preparation and packing explosives and other dangerous articles for transportation by carriers by rail, highway, or water. The Commission will give due weight to the expert opinions thus obtained. Reports of these investigations will be made to the Commission with recommendations.

(b) Specifications for shipping containers, methods of packing for shipment, and other regulations will be considered and prescribed from time to time by orders effective as conditions may appear to warrant.

### § 71.4 Changes in tank car specifications.

(a) Proposals of changes in or additions to specifications for tanks to be mounted on or to form part of a car and to be classified as tank cars should be submitted to the Secretary, Mechanical Division, Association of American Railroads, for thorough investigation and consideration by its committee on tank cars, that committee to report its recommendations, together with objections offered to its proposals, with explanations and reasons for desired approval thereof, through said secretary to the Commission, and such reports may be submitted to the Bureau of Explosives, as circumstances appear to warrant, for comments and suggestions before appropriate action by the Commission.

### § 71.5 Procedure covering tank car construction.

(a) Complete detailed prints of new or improved types of tank-car tanks and detailed prints or samples of new or improved types of equipment therefor should be submitted to the Secretary, Mechanical Division, Association of American Railroads, for thorough investigation and laboratory tests of samples by its committee on tank cars.

(b) When in the opinion of the committee such tanks or equipment therefor are in full compliance with effective specifications of the Commission and no increase in hazard is involved, their use should be permitted.

(c) When in the opinion of the committee such tanks or equipment therefor are in full compliance with effective specifications of the Commission and a possible increase in hazard is involved, service trials should be agreed upon among interested parties before more extended use is permitted.

(d) When in the opinion of the committee such tanks or equipment therefor do not comply with effective specifications of the Commission and service trials are desirable, approval by the Commission of the conditions of such trials must be obtained.

(e) Prompt reports of the tank car committee on these matters should be made to the Commission through said mechanical division secretary and should include objections to proposed modifications of the specifications and advice of any extensions of pending investigations found necessary. The committee's expert opinions thus obtained will be given due weight by the Commission in determining upon appropriate final action to be taken. The merits of controversies arising under the foregoing procedure will be considered and changes in or additions to the specifications, or authorizations of service trials, will be made by the Commission as conditions appear to warrant.

### § 71.6 Approved changes; notice.

(a) The Act of September 6, 1960, requires that notice of 90 days after formulation and publication should be given of the effective date of new or modified regulations, unless a shorter time is authorized by the Commission. The authority to establish amended regulations

upon less than 90 days' notice will be exercised only in instances where special and peculiar circumstances or conditions fully justify it.

**§ 71.7 Public hearings.**

(a) Public hearings concerning regulations contained in Parts 71–78 of this chapter will be held by the Commission at sufficiently frequent intervals. At these hearings evidence may be introduced in favor of proposed changes or additions and protest against the adoption thereof will also be heard. Final action also may be taken by the Commission without hearing, following 20 days' notice by the Commission of proposed changes or additions, or without such notice, as conditions appear to warrant.

**§ 71.8 Definitions.**

(a) The word "must" or "shall" is used in Parts 71–78 of this chapter in mandatory regulations. The word "should" indicates recommendatory provisions.

(b) Section 832 of the act of September 6, 1960 provides that any person who knowingly transports certain explosives, or any radioactive materials, or etiologic agents, on or in any passenger car or passenger vehicle of any description operated in the transportation of passengers by any for-hire carrier engaged in interstate or foreign commerce, by land, shall be fined or imprisoned or both. It further provides that emergency movements and movements of small quantities of those commodities on or in any such car or vehicle may be made under such regulations as the Commission may prescribe. As used in Parts 71–78 of this chapter the term "passenger car or passenger vehicle of any description operated in the transportation of passengers by any for-hire carrier . . . by land" means any railroad car of a passenger train, or highway vehicle, with passengers for-hire in the same such railroad car or highway vehicle.

(c) Whenever use of a container type is prescribed in the packing regulations but without specification number, the authorized type of container, either specification or nonspecification, may be used for the shipment.

(d) Numbering and lettering. The terms used in the numbering and lettering system employed in Parts 71–78 of this chapter, and adhered to in references made from one requirement to another, are as follows:

(1) Section: A major subdivision of a part, as § 73.193 of this chapter.

(2) Paragraph: A subdivision of a section, as paragraph (a) of this section, or § 73.193 (a).

(3) Subparagraph: A subdivision of a paragraph, as paragraph (a) (1) of this section, or § 73.193 (a) (1).

(e) Tank motor vehicle. The term "tank motor vehicle" means any motor vehicle designed or used for the transportation of liquids or gases covered by Parts 71–78 of this chapter in any cargo tank.

(f) Cargo tank. The term "cargo tank" means:

(1) *Permanently attached tank.* Any tank designed to be permanently attached to any motor vehicle or any container not permanently attached to any motor vehicle which by reason of its size, construction, or attachment to any motor vehicle must be loaded and/or unloaded without being removed from the motor vehicle and which tank or container is to be used to transport any flammable liquid, corrosive liquid, or poisonous liquid, class B, is hereby designated "cargo tank".

(2) *Fuel tank not a cargo tank.* A fuel tank is not a cargo tank, but one used to transport flammable liquid or compressed gas solely for the purpose of supplying fuel for the propulsion of a vehicle.

(g) The term "portable tank" means any tank designed primarily to be temporarily attached to a motor vehicle, other vehicle, railroad car other than tank car, or vessel, and equipped with skids, mountings or accessories to facilitate handling of the tank by mechanical means. The term "portable tank" shall not be construed to include any cargo tank, any tank car tank, or any tank of the ICC 106A (§§ 78.275 or 78.276 of this chapter) type.

**§ 71.9 Vessels stores.**

(a) Vessels stores are regulated by the regulations prescribed by the Commandant of the Coast Guard (46 CFR Part 147) and are not included in Parts 71–78 of this chapter.

**§ 71.10 Flammable or combustible liquids in bulk on board vessels.**

(a) Nothing in Parts 71–78 of this chapter shall be construed as affecting the transportation of flammable or combustible liquids in bulk on board vessels which transportation is governed by the rules and regulations promulgated under R.S. 4417a; 47 U.S.C. 391a (46 CFR Part 146).

**§ 71.11 Transportation by carriers by water.**

(a) When the transportation of a shipment involves movement by carrier by water, the applicable provisions of Parts 71–78 of this chapter must be observed by the shipper.

**§ 71.12 Export shipments by domestic carriers by rail and motor vehicles.**

(a) Explosives and other dangerous articles authorized to be exported from the United States when packed, marked, labeled, and described, in accordance with rules and regulations in force at destination ports, must not be offered to any common carrier by rail or motor vehicle for domestic transportation unless in full accordance with the regulations in Parts 71–78 of this chapter.

(b) Except for the requirements of §§ 77.817 and 77.823 of this chapter, the provisions of Parts 71–78 of this chapter do not apply to such transportation by motor vehicle or water as may be necessary to effect transfer of export shipments from place of shipment to other places within the same port area or delivery to a water carrier within the same port area (including contiguous harbors). Further transportation of such export shipments by connecting water carrier shall be subject to the regulations prescribed by the Commandant of the Coast Guard.

**§ 71.13 Emergency regulations.**

(a) Until further order of the Commission, shipments of explosives may be made upon requests of the Departments of the Army, Navy, and Air Force of the United States Government complying with the following:

(1) Shippers' and carriers' regulations; handling detonating agents and explosives and explosive ammunition in same car or vehicle. Detonating fuzes, class A explosives, primer-detonator assemblies or other detonating elements containing explosive components, if of a safe type, may be shipped either assembled in bombs, depth charges, mines, projectiles, or torpedoes (torpedo warheads) or in properly packed containers in the same car or vehicle with bombs, depth charges, mines, projectiles, boosters, or torpedoes (torpedo warheads) when separated from the explosive bombs, depth charges, mines, projectiles, boosters, or torpedoes (torpedo warheads) by not less than 3 feet. The intervening space of 3 feet must be filled with dry sand or dry earth in bags or in a crib so constructed or lined as to prevent sifting of the sand or earth. The crib must be secured against movement.

(2) When bomb fuzes are packed with bomb fin assemblies, either crated or boxed in wooden or metal containers, the sand or earth filled space between bombs and the fuzes may be omitted provided adequate blocking and bracing is supplied to prevent the bombs from crushing and injuring the detonating fuzes due to ordinary shocks incident to transportation.

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## PART 72—COMMODITY LIST OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES CONTAINING THE SHIPPING NAME OR DESCRIPTION OF ALL ARTICLES SUBJECT TO PARTS 71–78 OF THIS CHAPTER

Sec.

72.1 Proper shipping name.
72.2 Articles not described.
72.3 Labels required and prohibited articles.
72.4 Explanation of signs and abbreviations.
72.5 List of explosives and other dangerous articles.

AUTHORITY: The provisions of this Part 72 issued under 62 Stat. 738, 74 Stat. 808; 18 U.S.C. 834.

**§ 72.1 Proper shipping name.**

(a) The proper shipping name which must be used and shown on outside shipping containers appears in Roman type (not italics). The abbreviations N.O.I. and N.O.I.B.N. may be used in lieu of the abbreviation n. o. s. where it appears in the list of explosives and other dangerous articles.

**§ 72.2 Articles not described.**

(a) For an article not described by name shown in § 72.5, when such article is classified as dangerous by §§ 73.115, 73.150, 73.151, 73.240, 73.300, 73.326, 73.343, 73.381, or 73.391 of this chapter, the article must be prepared and offered for shipment in compliance with the regulations for the group within which it is properly classified.

**§ 72.3 Labels required and prohibited articles.**

(a) Section 72.5 also shows the kind of label when required on shipments of explosives and other dangerous articles and the articles which are prohibited for transportation.

**§ 72.4 Explanation of signs and abbreviations.**

(a) An asterisk indicates that articles may or may not be classed as flammable liquids, flammable solids, oxidizing materials, compressed gases, poisons, or corrosive liquids by Parts 71–78 of this chapter. If so classed, such articles are subject to the regulations prescribed for articles within these definitions.

F. L.—Flammable liquid.
F. S.—Flammable solid.
Oxy. M.—Oxidizing material.
Cor. L.—Corrosive liquid.
Nonf. G.—Nonflammable compressed gas.
F. G.—Flammable compressed gas.
Pois. A.—Poison gas or liquid, class A.
Pois. B.—Poisonous liquid or solid, Class B.
Pois. C.—Tear gas, class C.
Pois. D.—Radioactive materials, class D.
Expl. A.—Class A explosives.
Expl. B.—Class B explosives.
Expl. C.—Class C explosives.
Not accepted—Means not to be offered or accepted for transportation.
Forbidden—Means prohibited by law.
ϕ Indicates that articles may be transported as rail baggage.
# Required for rail express shipments only.
## Required for rail express and water shipments only.
N. O. S.—Means not otherwise specified.
N. O. I.—Means not otherwise indexed.
N. O. I. B. N.—Means not otherwise indexed by name.

NOTE 1: Where the word "INFLAMMABLE" is now painted, stenciled, or otherwise permanently marked on tank cars, cargo tank motor vehicles, portable tanks, or other containers, it may be so continued until such tanks or other containers are repainted, restenciled or both, and at such times shall be replaced with the word "FLAMMABLE" unless otherwise ordered by the Commission.

**§ 72.5 List of explosives and other dangerous articles.**

(a) For explanation of signs and abbreviations see § 72.4.

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
|---|---|---|---|---|
| Acetaldehyde (*ethyl aldehyde*) | F. L. | 73.118, 73.119 | Red | 10 gallons. |
| Acetone | F. L. | 73.118, 73.119 | do | Do |
| Acetone cyanhydrin | Pois. B | 73.345, 73.346 | Poison | 55 gallons. |
| *Acetone oils | F.L. | 73.118, 73.119 | Red | 10 gallons. |
| Acetonitrile | F.L. | 73.118, 73.119 | do | Do. |
| Acetyl benzoyl peroxide, solid | Not accepted | | | Not accepted. |
| Acetyl benzoyl peroxide, solution | Oxy. M | No exemption, 73.222 | Yellow | 1 quart. |
| Acetyl chloride | Cor. L | 73.244, 73.247 | White | 1 gallon. |
| Acetyl peroxide, solid | Not accepted | | | Not accepted. |
| Acetyl peroxide, solution | Oxy. M | 73.153 (b), 73.222 | Yellow | 1 quart. |
| Acetylene | F. G | 73.306, 73.303 | Red Gas | 300 pounds. |
| Acid carboys, empty | See § 73.29 (c) | | | |
| Acids, liquid, n.o.s. | Cor. L | 73.244, 73.245 | White | 5 pints. |
| Acid picric. *See* Picric acid. | | | | |
| *Acid sludge. *See* * Sludge acid. | | | | |
| Acrolein, inhibited | F. L | No exemption, 73.122 | Red | 1 quart. |
| Acrylonitrile | F. L | 73.118, 73.119 | do | 10 gallons. |
| Actuating cartridges, explosive, fire extinguisher or valve. | Expl. C | 73.114 | | 150 pounds. |
| *Aeroplane flares.* *See* Special fireworks. | | | | |
| Air, compressed | Nonf. G | 73.306, 73.302 | Green | 300 pounds. |
| Aircraft rocket engines (commercial). | F.S | No exemption, 73.238 | Yellow | 550 pounds. |
| Aircraft rocket engine igniters (commercial). | F.S | No exemption, 73.238 | do | 25 pounds. |
| *Alcohol, n.o.s. | F.L. | 73.118, 73.125 | Red | 10 gallons. |
| Alcohol, allyl | Pois. B | 73.345, 73.346 | Poison | 55 gallons. |
| Aldrin | Pois. B | 73.376 | do | 200 pounds. |
| Aldrin mixtures, liquid, with more than 60 percent aldrin. | Pois. B | 73.345, 73.361 | do | 55 gallons. |
| *Aldrin, cast solid | See § 73.376(b) | | | |
| Aldrin mixtures, dry, with more than 65 percent aldrin. | Pois. B | 73.364, 73.376 | Poison | 200 pounds. |
| *Aldrin mixtures, dry, with 65 percent or less aldrin. | See § 73.376 (b) | | | |
| *Aldrin mixtures, liquid, with 60 percent or less aldrin. | See § 73.361 (b) | | | |
| *Alkaline caustic liquids, n. o. s. | Cor. L | 73.244, 73.249 | White | 10 gallons. |
| Alkaline corrosive battery fluid | Cor. L | 73.244, 73.249. 73.257 | do | Do. |
| Alkaline corrosive battery fluid with storage battery. | Cor. L | No exemption, 73.258 | do | 400 pounds. |
| Alkaline corrosive liquids, n. o. s. | Cor. L | 73.244, 73.249 | do | 10 gallons. |
| Allyl alcohol. *See* Alcohol, allyl. | | | | |
| Allyl bromide | F. L | 73.118, 73.119 | Red | Do. |
| Allyl chlorocarbonate. *See* Allyl chloroformate. | | | | |
| Allyl chloroformate | Cor. L | No exemption, 73.288 | White | 5 pints. |
| Allyl trichlorosilane | Cor. L | No exemption, 73.290 | do | 10 gallons. |
| Aluminum dross | See § 73.173 | | | |
| *Aluminum liquid (or paint). *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| Aluminum nitrate | Oxy. M | 73.153, 73.182 | Yellow | 100 pounds. |
| Aluminum triethyl | F.L | No exemption, 73.134 | Red | 2 ounces. |
| Aluminum trimethyl | do | No exemption, 73.134 | do | Do. |
| *Amatol.* *See* High explosives. | | | | |
| Ammonia, anhydrous. *See* Anhydrous ammonia. | | | | |
| Ammonium arsenate, solid | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| Ammonium bichromate (ammonium dichromate). | F.S | 73.153, 73.154, 73.235 | Yellow | 100 pounds. |
| Ammonium nitrate | Oxy. M | 73.153, 73.182 | do | Do. |
| Ammonium nitrate fertilizer, containing 90 percent or more ammonium nitrate with no organic coating. | Oxy. M | 73.153, 73.182 | do | Do. |
| Ammonium nitrate—carbonate mixtures. | Oxy. M | 73.153, 73.182 | do | Do. |
| *Ammonium nitrate mixed fertilizer | Oxy. M | 73.153, 73.182 | do | Do. |
| Ammonium nitrate (organic coating.) | Oxy. M | 73.153, 73.182 | do | Do. |
| *Ammonium nitrate—phosphate | Oxy. M | 73.153, 73.182 | do | Do. |
| Ammonium perchlorate | Oxy. M | 73.153, 73.154 | do | Do. |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
|---|---|---|---|---|
| Ammonium permanganate | Oxy. M | 73.153, 73.154 | Yellow | 100 pounds |
| *Ammonium picrate.* See High explosives. | | | | |
| *Ammonium picrate, wet (not to exceed 16 ounces)* | See § 73.192 | | | |
| *Ammunition, chemical (containing class A poisons, liquids, or gases).* See Chemical ammunition. | | | | |
| *Ammunition, chemical (containing class B poisons, liquids, or gases).* See Chemical ammunition. | | | | |
| *Ammunition, chemical (containing class C poisons, liquids, or solids).* See Chemical ammunition. | | | | |
| *Ammunition, chemical, explosive* | See § 73.59 | | | |
| *Ammunition material* | See § 73.55 | | | |
| *Ammunition non-explosive* | See § 73.55 | | | |
| Ammunition for cannon with empty projectiles. | Expl. B | No exemption, 73.89 | | Not accepted. |
| Ammunition for cannon with explosive projectiles. | Expl. A | No exemption, 73.54 | | Do. |
| Ammunition for cannon with gas projectiles. | Expl. A | No exemption, 73.54 | | Do. |
| Ammunition for cannon with illuminating projectiles. | Expl. A | No exemption, 73.54 | | Do. |
| Ammunition for cannon with incendiary projectiles. | Expl. A | No exemption, 73.54 | | Do. |
| Ammunition for cannon with inert-loaded projectiles. | Expl. B | No exemption, 73.89 | | Do. |
| Ammunition for cannon with smoke projectiles. | Expl. A | No exemption, 73.54 | | Do. |
| Ammunition for cannon with solid projectiles. | Expl. B | No exemption, 73.89 | | Do. |
| Ammunition for cannon without projectiles. | Expl. B | No exemption, 73.89 | | Do. |
| *Ammunition, rocket.* See Rocket ammunition. | | | | |
| Ammunition, small-arms. See Small-arms ammunition | | | | |
| Ammunition for small-arms with explosive bullets. | Expl. A | No exemption, 73.58 | | Do. |
| Ammunition for small-arms with explosive projectiles. | Expl. A | No exemption, 73.58 | | Do. |
| *Amyl acetate | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Amyl chloride | F. L | 73.118, 73.119 | do | Do. |
| Amyl mercaptan | F. L | No exemption, 73.141 | do | Do. |
| Amyl nitrite | F. L | 73.118, 73.119 | do | Do. |
| Amyl trichlorosilane | Cor. L | No exemption, 73.280 | White | Do. |
| ϕAnhydrous ammonia | Nonf. G | 73.306, 73.304, 73.314, 73.315 | Green | 300 pounds. |
| Anhydrous hydrazine. See Hydrazine, anhydrous. | | | | |
| Anhydrous hydrofluoric acid. See Hydrofluoric acid, anhydrous. | | | | |
| *Aniline oil* drums, empty | See § 73.347 (d) | | | |
| Aniline oil, liquid | Pois. B | No exemption, 73.347 | Poison | 55 gallons. |
| Anisoyl chloride | Cor. L | 73.244, 73.279 | White | 1 quart. |
| *Anti-freeze compounds, liquid | F. L | 73.118, 73.119 | Red | 10 gallons. |
| *Anti-freeze preparations proprietary, liquid. | F. L | 73.118, 73.119 | do | Do. |
| Antimony pentachloride | Cor. L | 73.244, 73.247 | White | 1 quart. |
| Antimony pentachloride, solution | Cor. L | 73.244, 73.245 | do | 5 pints. |
| Antimony pentafluoride | Cor. L | No exemption, 73.246 | do | 25 pounds. |
| *Apparatus.* See *Refrigerating machines, comp. gas or flammable liquid.* | | | | |
| *Aqua ammonia solution containing anhydrous ammonia. | Nonf. G | 73.306, 73.304, 73.314, 73.315 | Green | 300 pounds. |
| Argon | Nonf. G | 73.306, 73.302, 73.314 | do | Do. |
| Argon, pressurized liquid | Nonf. G | No exemption, 73.304 | do | Do. |
| Arsenate of lead. See Lead arsenate. | | | | |
| Arsenic acid, liquid | Pois. B | 73.345, 73.348 | Poison | 55 gallons. |
| Arsenic acid, solid | Pois. B | 73.364, 73.366 | do | 200 pounds. |
| Arsenic bromide, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Arsenic chloride (arsenous), liquid | Pois. B | 73.345, 73.346 | do | 55 gallons. |
| Arsenic iodide, solid | Pois. B | 73.364, 73.365 | do | 200 pounds. |
| Arsenic pentoxide, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Arsenic solid | Pois. B | 73.364, 73.366 | Poison | 200 pounds. |
| Arsenic sulfide (powder), solid | Pois. B | 73.364, 73.365 | do | Do. |
| Arsenic trichloride, liquid | Pois. B | 73.345, 73.346 | do | 55 gallons. |
| Arsenic trioxide, solid (arsenic, white, solid, arsenous acid, solid) | Pois. B | 73.364, 73.366, 73.368 | do | 200 pounds. |
| Arsenic, white, solid | Pois. B | 73.364, 73.366 | do | Do. |
| Arsenical compounds or mixtures, n. o. s., liquid. | Pois. B | 73.345, 73.346 | do | 55 gallons. |
| Arsenical compounds or mixtures, n. o. s., solid. | Pois. B | 73.364, 73.367 | do | 200 pounds. |
| Arsenical dip, liquid (sheep dip) | Pois. B | 73.345, 73.346 | do | 55 gallons. |
| Arsenical dust | Pois. B | 73.364, 73.368 | do | 200 pounds. |
| Arsenical flue dust | Pois. B | 73.364, 73.368 | do | Do. |
| Arsenous acid, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Arsenous and mercuric iodide solution, liquid. | Pois. B | 73.345, 73.346 | do | 55 gallons. |
| **Asphalt, cut-back.* See *Road asphalt, or tar, liquid. | | | | |
| Automobiles, motorcycles, tractors or other self-propelled vehicles. | See §§ 73.120, 73.306. | | | |
| 1-Aziridinyl phosphine oxide (tris). See Tris-(1-aziridinyl) phosphine oxide. | | | | |
| Bags, nitrate of soda, empty and unwashed. | F. S | No exemption, 73.155 (a) | Yellow | 25 pounds. |
| Barium azide—50 percent or more water wet. | F.S | No exemption, 73.239 | do | 1 pound. |
| Barium chlorate | Oxy. M | 73.153, 73.163 | do | 100 pounds. |
| Barium chlorate, wet | Oxy. M | 73.153, 73.163 (a) (6) | do | 200 pounds. |
| Barium cyanide, solid | Pois. B | 73.370 | Poison | Do. |
| Barium nitrate | Oxy. M | 73.153, 73.182 | Yellow | 100 pounds. |
| Barium perchlorate | Oxy. M | 73.153, 73.154 | do | Do. |
| Barium permanganate | Oxy. M | 73.153, 73.154 | do | Do. |
| Barium peroxide (*binoxide, dioxide*) | Oxy. M | 73.153, 73.156 | do | Do. |
| Barrels, empty. See Drums, empty. | | | | |
| *Batteries, dry* | Not regulated | | | |
| Batteries, electric storage, wet | Cor. L | 73.260 | White | 600 pounds. |
| Batteries, electric storage, wet, with automobiles, auto parts, engines or other mechanical apparatus. | Cor. L | 73.250, 73.260 | do | No limit. |
| Batteries, electric storage, wet, with containers of corrosive battery fluid. | Cor. L | No exemption, 73.258 | do | 2 gallons. |
| *Battery charger with electrolyte (acid) or battery fluid.* | See § 73.259 | | | |
| Battery fluid. See Electrolyte (acid) or Alkaline corrosive battery fluid. | | | | |
| Benzene (benzol) | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Benzine | F. L | 73.118, 73.119 | do | Do. |
| Benzol (benzene) | F. L | 73.118, 73.119 | do | Do. |
| Benzoyl chloride | Cor. L | 73.244, 73.247 | White | 1 quart. |
| Benzoyl peroxide | Oxy. M | No exemption, 73.157, 73.158 | Yellow | 25 pounds. |
| Benzyl bromide (bromotoluene, alpha). | Cor. L | No exemption, 73.281 | White | 5 pints. |
| Benzyl chloride | Cor. L | 73.244, 73.295 | do | 1 quart. |
| Benzyl chlorocarbonate. See Benzyl chloroformate. | | | | |
| Benzyl chloroformate | Cor. L | No exemption, 73.288 | do | 5 pints. |
| Beryllium metal powder | Pois. B | No exemption, 73.378 | Poison | 25 pounds. |
| Black blasting powder. See Black powder. | | | | |
| Black pellet powder. See Black powder. | | | | |
| Black powder | Expl. A | No exemption, 73.60 | | Not accepted. |
| Black powder igniters with empty cartridge bags. | Expl. C | No exemption, 73.106 | | 150 pounds. |
| Black rifle powder. See Black powder. | | | | |
| Blasting caps—1,000 or less | Expl. C | No exemption, 73.103 | | See § 73.86. |
| Blasting caps with metal clad mild detonating fuse—1,000 or less. | Expl. C | No exemption, 73.103 | | Do. |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
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| Blasting caps—more than 1,000 | Expl. A | No exemption, 73.66 | | Not accepted. |
| Blasting caps with metal clad mild detonating fuse—more than 1,000 | Expl. A | No exemption, 73.66(c), 73.67 | Poison | Do. |
| Blasting caps with safety fuse—1,000 or less | Expl. C | No exemption, 73.103 | | See § 73.86. |
| Blasting caps with safety fuse—more than 1,000 | Expl. A | No exemption, 73.66(c), 73.67 | | Not accepted. |
| Blasting caps, electric. *See* Electric blasting caps. | | | | |
| *Blasting gelatin. See* High explosives. | | | | |
| *Blasting powder. See* Black powder. | | | | |
| *Boiler compound, liquid | Cor. L | 73.244, 73.249 | White | 10 gallons. |
| *Bombs, explosive. See* Explosive bomb. | | | | |
| *Bombs, explosive, with gas, smoke, or incendiary material. See* Explosive bomb. | | | | |
| *Bombs, fireworks. See* Special fireworks. | | | | |
| *Bombs, gas, smoke or incendiary, non-explosive. See Chemical ammunition.* | | | | |
| *Bombs, explosive, incendiary. See* Explosive bombs. | | | | |
| *Bombs, incendiary or smoke, without bursting charges. See* Special fireworks. | | | | |
| *Bombs, practice, with electric primers or electric squibs* | See § 73.55 | | | |
| *Bombs, sand-loaded or empty* | See § 73.55 | | | |
| Boosters (explosive) | Expl. A | No exemption, 73.69 | | Not accepted. |
| Bordeaux arsenites, liquid | Pois. B | 73.345, 73.346 | Poison | 55 gallons. |
| Bordeaux arsenites, solid | Pois. B | 73.364, 73.365 | do | 200 pounds. |
| Boron trichloride | Cor. L | No exemption, 73.251 | White | 1 quart. |
| Boron trifluoride | Nonf. G | 73.306, 73.302 | Green | 300 pounds. |
| Bottles, *acid or other corrosive liquids*, empty. | See § 73.29 | | | |
| *Box toe gum | F. L | 73.118, 73.119 | Red | 10 gallons. |
| *Boxes, reused* | See § 73.28 | | | |
| Bromacetone, liquid | Pois. A | No exemption, 73.329 (a) | Poison Gas | Not accepted. |
| Brombenzyl cyanide, liquid | Pois. C | No exemption, 73.382 | Tear Gas | 20 pounds. |
| Bromine | Cor. L | No exemption, 73.252 | White | 1 quart. |
| Bromine pentafluoride | Cor. L | No exemption, 73.284 | do | 100 pounds. |
| Bromine trifluoride | Cor. L | No exemption, 73.283 | do | Do. |
| Bromotoluene, alpha. *See* Benzyl bromide. | | | | |
| *Bronze liquid (or paint). *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| Brucine, solid (dimethoxy strychnine). | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| Burnt cotton (not repicked) | F. S | No exemption, 73.159 | Yellow | Not accepted. |
| Burnt fiber | F. S | No exemption, 73.169 | do | Do. |
| Bursters (explosive) | Expl. A | No exemption, 73.69 | | Do. |
| Butadiene, inhibited | F.G | 73.306, 73.304, 73.314, 73.315 | Red Gas | 300 pounds. |
| *Butane. See* Liquefied petroleum gas. | | | | |
| *Butyl acetate | F. L | 73.118, 73.119 | Red | 10 gallons. |
| *Butyl alcohol. *See* Alcohol, n.o.s. | | | | |
| Butyl mercaptan | F. L | No exemption, 73.141 | do | Do. |
| Butyl trichlorosilane | Cor. L | No exemption, 73.280 | White | Do. |
| Butyraldehyde | F. L | 73.118, 73.119 | Red | Do. |
| Cacodylic acid, solid (dimethylarsenic). | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| Calcium arsenate, solid | Pois. B | 73.364, 73.367, 73.368 | do | Do. |
| Calcium arsenite, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Calcium chlorate | Oxy. M | 73.153, 73.163 | Yellow | 100 pounds. |
| Calcium chlorite | Oxy. M | No exemption, 73.160 | do | Do. |
| Calcium cyanide. *See* Cyanide of calcium. | | | | |
| Calcium hypochlorite compounds, dry, containing more than 39 percent available chlorine. | Oxy. M | 73.153, 73.217 | do | Do. |
| Calcium, metallic | F. S | 73.153, 73.154 | do | Do. |
| Calcium, metallic, crystalline | F. S | No exemption, 73.231 | do | 25 pounds. |
| Calcium nitrate | Oxy. M | 73.153, 73.182 | do | 100 pounds. |
| Calcium peroxide | Oxy. M | 73.153, 73.156 | Yellow | 100 pounds. |
| Calcium permanganate | Oxy. M | 73.153, 73.154 | do | Do. |
| Calcium phosphide | F. S | No exemption, 73.161 | do | 25 pounds. |
| Calcium resinate | F. S | No exemption, 73.166 | do | 125 pounds. |
| Calcium resinate, fused | F. S | No exemption, 73.166 | do | Do. |
| Cannon primers | Expl. C | No exemption, 73.107 | | 150 pounds. |
| *Caps, blasting. See* Blasting caps. | | | | |
| *Caps, toy. See* Toy caps. | | | | |
| Caprylyl peroxide solution | Oxy. M | 73.153 (b), 73.221 | do | 1 quart. |
| Carbolic acid, fused solid. *See* Carbolic acid (phenol), solid. | | | | |
| Carbolic acid (phenol), liquid, (liquid tar acid containing over 50 percent benzo-phenol). | Pois. B | 73.345, 73.349 | Poison | 55 gallons. |
| Carbolic acid (phenol), solid | Pois. B | 73.369 | do | 250 pounds. |
| Carbon bisulfide (disulfide) | F. L | No exemption, 73.121 | Red | Not accepted. |
| Carbon dioxide gas, liquefied ("mining device"). | Nonf. G | 73.304(a)(2) table Note 4 | Green | 6 pounds. |
| ¢Carbon dioxide, liquefied | Nonf. G | 73.306, 73.304, 73.314, 73.315 | do | 300 pounds. |
| Carbon dioxide—nitrous oxide mixture | Nonf. G | 73.306, 73.304 | do | Do. |
| Carbon dioxide—oxygen mixture | Nonf. G | 73.306, 73.304 | do | Do. |
| Carbon monoxide | F.G | 73.306, 73.304 | Red Gas | 150 pounds. |
| *Carbon remover, liquid | F. L | 73.118, 73.119 | Red | 10 gallons. |
| *Carbonyl chloride. See* Phosgene. | | | | |
| Carboys, acid, empty | See § 73.29 (c) | | | |
| Carboys, empty. *See* Acid carboys, empty. | | | | |
| Cartridge bags, empty, with black powder igniters. | Expl. C | No exemption, 73.106 | | 150 pounds. |
| Cartridge cases, empty, primed | Expl. C | No exemption, 73.107 | | Do. |
| Case oil. *See* Gasoline, *Naphtha. | | | | |
| *Casinghead gasoline. See* Gasoline. | | | | |
| Casks, empty. *See* Drums, empty. | | | | |
| Caustic potash, liquid | Cor. L | 73.244, 73.249 | White | 10 gallons. |
| Caustic soda, liquid | Cor. L | 73.244, 73.249 | do | Do. |
| *Cement, adhesive, n.o.s. *See* Cement, liquid, n.o.s. | | | | |
| *Cement, leather | F. L | 73.118, 73.119 | Red | 12 gallons. |
| *Cement, linoleum, tile, wallboard, or container, liquid. | F. L | 73.118, 73.132 | do | 15 gallons. |
| *Cement, liquid, n.o.s. | F.L | 73.118, 73.119, 73.132 | do | Do. |
| *Cement, pyroxylin | F. L | 73.118, 73.132 | do | Do. |
| *Cement, roofing, liquid | F. L | 73.118, 73.119 | do | 12 gallons. |
| *Cement, rubber | F. L | 73.118, 73.132 | do | 15 gallons. |
| Cesium 137 | Pois. D | 73.392, 73.393 | Poison radioactive materials, red. | 300 curies. See § 73.391 (c). |
| *Charcoal, activated | F. S | 73.162 | Yellow | 200 pounds. |
| Charcoal briquettes | F. S | 73.162 | | Do. |
| Charcoal, shell | F. S | 73.162 | Yellow | Do. |
| Charcoal, wood, ground, crushed, granulated or pulverized. | F. S | 73.162 | do | Do. |
| Charcoal, wood, lump | F. S | 73.162 | do | 100 pounds. |
| Charcoal screenings, *made from "pinon", wood.* | F. S | 73.162 | Yellow | 200 pounds. |
| Charcoal, wood screenings *other than "pinon" wood screenings.* | F. S | No exemption, 73.162 | Yellow | Not accepted. |
| Charcoal screenings, wet | Not accepted | | | Do. |
| Charcoal, wet | Not accepted | | | Do. |
| Charged oil well jet perforating guns (*total explosive contents in guns exceeding 50 pounds per motor vehicle*). | Expl. A | No exemption, 73.53(u), 73.80. | | Do. |
| Charged oil well jet perforating guns (*total explosive contents in guns not exceeding 50 pounds per motor vehicle*). | Expl. C | No exemption, 73.53(u), 73.110. | | Do. |
| *Chemicals, n. o. s. *See* *Drugs, chemicals, medicines or cosmetics, n. o. s. | | | | |
| *Chemical ammunition (containing class A poisons, liquids, or gases).* | Pois. A | No exemption, 73.330 | Poison Gas | Do. |
| *Chemical ammunition (containing class B poisons, liquids, or gases).* | Pois. B | 73.345, 73.350 | Poison | 55 gallons. |
| *Chemical ammunition (containing class C poisons, liquids, or solids).* | Pois. C | No exemption, 73.383 | Tear Gas | 20 pounds. |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
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| *Chemical ammunition, explosive* | See § 73.59 | | | |
| *Chemical kits | See § 73.286 | | | |
| Chloracetophenone, gas, liquid, or solid. | Pois. C | No exemption, 73.382 | Tear Gas | 75 pounds. |
| Chloracetyl chloride | Cor. L | No exemption, 73.253 | White | 1 quart. |
| *Chlorate and borate mixtures | Oxy. M | 73.153, 73.229 | Yellow | 100 pounds. |
| *Chlorate and magnesium chloride mixture. | Oxy. M | 73.153, 73.229 | do | Do. |
| Chlorates, n. o. s. | Oxy M | 73.153, 73.163 | do | Do. |
| Chlorates, n. o. s., wet | Oxy. M | 73.153, 73.163 (a) (6) | do | 200 pounds. |
| *Chlorate explosives, dry.* See High explosives. | | | | |
| Chlorate of potash | Oxy. M | 73.153, 73.163 | Yellow | 100 pounds. |
| Chlorate of soda | Oxy. M | 73.153, 73.163 | do | Do. |
| *Chlorate powders.* See High explosives. | | | | |
| Chloride of phosphorus. *See* Phosphorus trichloride. | | | | |
| Chloride of sulfur. *See* Sulfur chloride. | | | | |
| 6 Chlorine | Nonf. G | 73.306, 73.304, 73.314, 73.315 | Green | 150 pounds. |
| Chlorine dioxide hydrate, frozen | Oxy. M | No exemption, 73.237 | Yellow | Not accepted. |
| Chlorine trifluoride | Cor. L | No exemption, 73.285 | White | 100 pounds. |
| Chlorobenzoyl peroxide (para) | Oxy. M | No exemption, 73.157, 73.158 | Yellow | 25 pounds. |
| *Chlorodinitrobenzol.* See Dinitrochlorbenzol, solid. | | | | |
| Chlorosulfonic acid | Cor. L | 73.244, 73.254 | White | 1 quart. |
| Chlorosulfonic acid-sulfur trioxide mixture. | Cor. L | 73.244, 73.254 | do | Do. |
| 4-Chloro-o-toluidine hydrochloride | Pois. B | No exemption, 73.362 | Poison | Do. |
| Chlorpicrin and methyl chloride mixtures. | Pois. A | No exemption, 73.329 (b) | Poison Gas | Not accepted. |
| Chlorpicrin, liquid | Pois. B | No exemption, 73.357 | Poison | 24 pounds. |
| Chlorpicrin, absorbed | do | do | do | 75 pounds. |
| Chlorpicrin, mixtures (*containing no compressed gas or poisonous liquid, class A*). | do | do | do | Do. |
| Chlorpicrin and nonflammable, nonliquefied compressed gas mixtures. | Pois. A | No exemption, 73.329(c) | Poison Gas | Not accepted. |
| Chromic acid | Oxy. M | 73.153, 73.164 | Yellow | 100 pounds. |
| Chromic acid solution | Cor. L | 73.244, 73.245, 73.287 | White | 1 gallon. |
| Chromic anhydride. See Chromic acid. | | | | |
| Chromium trioxide. *See* Chromic acid. | | | | |
| Chromyl chloride | Cor. L | No exemption, 73.247 | do | Do. |
| Cigar and cigarette lighter fluid | F. L | 73.118, 73.119 | Red | 10 gallons. |
| *Cigarette lighters charged with fuel* | See § 73.21(d) | | | |
| Cigarette loads | Expl. C | No exemption, 73.111 | | 150 pounds. |
| *Cleaning fluid or liquid | F. L | 73.118, 73.119 | Red | 10 gallons. |
| *Cloud gas cylinders.* See *Chemical ammunition.* | | | | |
| Coal briquettes, hot | Not accepted | | | Not accepted. |
| *Coal gas.* See Hydrocarbon, gas, non-liquefied. | | | | |
| Coal, ground bituminous, sea coal, coal facings, etc. | See §73.165 | | | |
| *Coal tar distillate | F. L | 73.118, 73.119 | Red | 10 gallons. |
| *Coal tar light oil | F. L | 73.118, 73.119 | do | Do. |
| *Coal tar naphtha | F. L | 73.118, 73.119 | do | Do. |
| *Coal tar oil | F. L | 73.118, 73.119 | do | Do. |
| *Coating solution | F. L | 73,118, 73,132 | do | 15 gallons. |
| Cobalt 60 | Pois. D | 73.392, 73.393 | Poison radioactive materials, red. | 300 curies. See § 73.391 (c). |
| Cobalt resinate, precipitated | F. S | No exemption, 73.166 | Yellow | 125 pounds. |
| Cocculus, solid (*fish berry*) | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| Coke, hot | Not accepted | | | Not accepted. |
| Collodion | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Collodion cotton, wet. *See* Wet nitrocellulose. | | | | |
| Cologne spirits (*alcohol*) | F. L | 73.118, 73.119 | do | Do. |
| *Colored fire.* See Common fireworks. | | | | |
| Columbian spirits (*wood alcohol*) | F. L | 73.118, 73.119 | do | Do. |
| Combination fuzes | Expl. C | No exemption, 73.105 | | 150 pounds. |
| Combination primers | Expl. C | No exemption, 73.107 | | Do. |
| *Commercial shaped charges.* See High explosives. | See § 73.65 (h) | | | |
| Common fireworks | Expl. C | No exemption, 73.100 (r), 73.108. | | 200 pounds. |
| *Compounds, cleaning, liquid | Cor. L | 73.244, 73.245 | White | 1 quart. |
| *Compounds, cleaning liquid | F. L | 73.118, 73.119 | Red | 10 gallons. |
| *Compounds, cleaning, liquid (containing, hydrochloric (muratic) acid). | Cor. L | 73.244, 73.263 | White | Do. |
| Compounds, cleaning, liquid (*containing hydrofluoric acid*). | Cor. L | 73.244, 73.256 | do | Do. |
| *Compounds, enamel | F. L | 73.118, 73.128 | Red | 55 gallons. |
| *Compounds, iron or steel rust preventing or removing. | Cor. L | 73.244, 73.245 | White | 1 gallon. |
| *Compounds, lacquer, paint, or varnish, etc., removing, reducing or thinning, liquid. | F. L | 73.118, 73.128 | Red | 55 gallons. |
| *Compounds, lacquer, paint, or varnish removing, liquid. | Cor. L | 73.244, 73.245 | White | 1 gallon. |
| *Compounds, polishing, liquid | F. L | 73.118, 73.129 | Red | 55 gallons. |
| *Compounds, tree or weed killing, liquid. | F. L | 73.118, 73.119 | do | 10 gallons. |
| *Compounds, tree or weed killing, liquid. | Pois. B | 73.345, 73.346 | Poison | 55 gallons. |
| *Compounds, tree or weed killing, solid. | Oxy. M | 73.153, 73.154, 73.229 | Yellow | 100 pounds. |
| *Compounds, type-cleaning, liquid | F. L | 73.118, 73.119 | Red | 10 gallons. |
| *Compounds, vulcanizing, liquid | Cor. L | 73.244, 73.245 | White | 1 quart. |
| *Compounds, vulcanizing, liquid | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Compressed gases, n. o. s. | Nonf. G | 73.306, 73.304, 73.302 | Green | 300 pounds. |
| Compressed gases, n. o. s. | F. G | 73.306, 73.304, 73.302 | Red Gas | Do. |
| *Containers, empty.* See Acid carboys, empty; bottles empty, drums empty, cylinders empty. | See § 73.29 | | | |
| *Containers, reused* | See § 73.28 | | | |
| Copper acetoarsenite, solid (*emerald green, imperial green, Kings green, moss green, meadow green, mitis green, parrot green, Vienna green*). | Pois. B | 73.364, 73.367 | Poison | 200 pounds. |
| Copper arsenite, solid (Scheele's green, cupric green, copper orthoarsenite, Swedish green). | Pois. B | 73.364, 73.365 | do | Do. |
| Copper cyanide | See § 73.370 | | | |
| Cordeau detonant fuse | Expl. C | No exemption, 73.104 | | 300 pounds. |
| Corrosive battery fluid. *See* Electrolyte (acid), or Alkaline corrosive battery fluid. | | | | |
| Corrosive liquid, n. o. s. | Cor. L | 73.244, 73.245 | White | 5 pints. |
| Cotton, burnt. *See* Burnt cotton. | | | | |
| Cotton waste, oily *with more than 5 percent of animal or vegetable oil.* | F. S | No exemption, 73.167 | Yellow | Not accepted. |
| Crotonaldehyde | F. L | 73.118, 73.119 | Red | 10 gallons. |
| *Crude nitrogen fertilizer solution | Nonf. G | 73.306, 73.304, 73.314 | Green | 300 pounds. |
| *Crude oil, petroleum | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Cumene hydroperoxide | Oxy. M | 73.153, (b), 73.224 | Yellow | 1 quart. |
| Cupriethylene-diamine solution | Cor. L | 73.244, 73.249 | White | 1 gallon. |
| Cyanide of calcium or cyanide of calcium mixtures, solid. | Pois. B | 73.370 (c) and (d) | Poison | 200 pounds. |
| Cyanides of copper, zinc, lead, and silver. | See § 73.370 | | | |
| Cyanides or cyanide mixtures, dry | Pois. B | 73.364, 73.370 | Poison | 200 pounds. |
| Cyanide of potassium, liquid | Pois. B | 73.345, 73.352 | do | 55 gallons. |
| Cyanide of potassium, solid | Pois. B | 73.370 | do | 200 pounds. |
| Cyanide of sodium, liquid | Pois. B | 73.345, 73.352 | do | 55 gallons. |
| Cyanide of sodium, solid | Pois. B | 73.370 | do | 200 pounds. |
| Cyanogen bromide | Pois. B | No exemption, 73.379 | do | 25 pounds. |
| Cyanogen chloride containing less than 0.9 percent water. | Pois. A | No exemption, 73.328 | Poison Gas | Not accepted. |
| Cyanogen gas | Pois. A | No exemption, 73.328 | do | Do. |
| Cyclohexane | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Cyclohexanone peroxide over 50 percent concentration but not exceeding 85 percent concentration. | Oxy. M | No exemption, 73.157, 73.158 | Yellow | 25 pounds. |

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| Cyclohexanone peroxide not over 50 percent concentration. | Oxy. M | 73.153, 73.154 | Yellow | 25 pounds. |
| Cyclohexenyl trichlorosilane | Cor. L | No exemption, 73.280 | White | 10 gallons. |
| Cyclohexyl trichlorosilane | Cor. L | No exemption, 73.280 | do | Do. |
| Cyclopentane | F. L | 73.118, 73.119 | Red | Do. |
| Cyclopentane, methyl | F. L | 73.118, 73.119 | do | Do. |
| Cyclopropane | F. G | 73.306, 73.304 | Red Gas | 300 pounds. |
| *Cyclotrimethylenetrinitramine, desensitized.* See High explosives. | | | | |
| *Cyclotrimethylenetrinitramine, wet with not less than 10 percent of water. See* High explosives. | | | | |
| Cylinders, empty | See § 73.29 | | | |
| Decaborane | F.S | No exemption, 73.236 | Yellow | 25 pounds. |
| Delay electric igniters | Expl. C | No exemption, 73.106 | | 150 pounds. |
| Denatured alcohol. *See* Alcohol, n.o.s. | | | | |
| *Depth bombs. See* Explosive bomb. | | | | |
| Detonating fuzes, class A explosives. | Expl. A | No exemption, 73.69 | | Not accepted. |
| Detonating fuzes, class A explosives, radioactive. | Expl. A | No exemption, 73.69 | | Do. |
| Detonating fuzes, class C explosives. | Expl. C | No exemption, 73.113 | | 150 pounds. |
| Detonating primers | Expl. A | No exemption, 73.68 | | Not accepted. |
| *Diazodinitrophenol. See* Initiating explosive. | | | | |
| Dichlorethylene | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Dichlorodifluoromethane | Nonf. G | 73.306, 73.304, 73.314, 73.315 | Green | 300 pounds. |
| ϕDichlorodifluoromethane-dichlorotetrafluoroethane mixture. | Nonf. G | 73.306, 73.304, 73.314, 73.315 | do | Do. |
| ϕDichlorodifluoromethane-monochlorodifluoromethane mixture. | Nonf. G | 73.306, 73.304, 73.314 | do | Do. |
| ϕDichlorodifluoromethane-trichloromonofluoromethane-monochlorodifluoromethane mixture. | Nonf. G | 73.306, 73.304, 73.314 | do | Do. |
| ϕDichlorodifluoromethane-trichlorotrifluoroethane mixture. | Nonf. G | 73.306, 73.304, 73.314 | do | Do. |
| *Dichlorodifluoromethane-monofluorotrichloromethane mixture. | Nonf. G | 73.306, 73.314, 73.315 | do | Do. |
| Dichlorodifluoromethane and difluoroethane mixture (*constant boiling mixture*). | Nonf. G | 73.306, 73.304, 73.314, 73.315 | do | Do. |
| Dicumyl peroxide, solid | Oxy. M | 73.153, 73.154 | Yellow | 25 pounds. |
| Dicumyl peroxide, 50 percent solution. | Oxy. M | 73.153 (b), 73.224 | do | 1 quart. |
| Diethyl aluminum chloride | F.L | No exemption, 73.134 | Red | 2 ounces. |
| Diethyl dichlorosilane | Cor. L | No exemption, 73.280 | White | 10 gallons. |
| Diethylamine | F. L | 73.118, 73.119 | Red | Do. |
| *Diethylene glycol dinitrate* | See § 73.51 (d) | | | |
| Difluoroethane | F.G | 73.306, 73.304, 73.314, 73.315 | Red Gas | 300 pounds. |
| Difluoromonochloroethane | F. G | 73.306, 73.304, 73.314 | do | Do. |
| Difluorophosphoric acid, anhydrous. | Cor. L | No exemption, 73.275 | White | 1 gallon. |
| *Di iso octyl acid phosphate | Cor. L | 73.244, 73.296 | do | 1 quart. |
| Diisopropylbenzene hydroperoxide. | Oxy. M | 73.153(b), 73.224 | Yellow | Do. |
| Dimethylamine, anhydrous | F. G | 73.306, 73.304, 73.314, 73.315 | Red Gas | 300 pounds. |
| Dimethylamine, aqueous solution | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Dimethyldichlorosilane | F. L | No exemption, 73.135 | do | Do. |
| Dimethylhexane dihydroperoxide | Oxy. M | No exemption, 73.157, 73.158 | Yellow | 25 pounds. |
| Dimethylhydrazine, unsymmetrical. | F.L | No exemption, 73.145 | Red | 5 pints. |
| Dimethyl ether | F. G | 73.306, 73.304, 73.314 | Red Gas | 300 pounds. |
| Dimethyl sulfate | Cor. L | No exemption, 73.255 | White | 1 quart. |
| Dimethyl sulfide | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Dinitrobenzol, solid | Pois. B | 73.364, 73.371 | Poison | 200 pounds. |
| Dinitrobenzol, liquid | Pois. B | 73.345, 73.346 | do | 55 gallons. |
| Dinitrochlorbenzol, solid (*dinitrochlorobenzene, chlorodinitrobenzol*). | Pois. B | 73.364, 73.365 | do | 200 pounds. |
| Dinitrophenol solutions | Pois. B | 73.345, 73.362a | do | 55 pounds. |
| Diphenyl dichlorosilane | Cor. L | No exemption, 73.280 | White | 10 gallons. |
| Diphenylaminechlorarsine, gas, liquid or solid. | Pois. C | No exemption, 73.382 | Tear Gas | 75 pounds. |
| Diphenylchlorarsine, solid | Pois. C | No exemption, 73.382 | do | 20 pounds. |
| Diphosgene. *See* Phosgene. | | | | |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
|---|---|---|---|---|
| *Dispersant gas, n.o.s.* | See §§ 73.314(c) table Note 13, 73.315(a) table Note 9. | | | |
| *Distillate | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Dodecyltrichlorosilane | Cor. L | No exemption, 73.280 | White | Do. |
| *Dressing, leather | F. L | 73.118, 73.119 | Red | Do. |
| *Driers, paint, varnish, enamel, etc. *See* *Paint driers, liquid. | | | | |
| Drill cartridges | See § 73.55 | | | |
| *Drugs, chemicals, medicines or cosmetics, n. o. s. | F. L | 73.118, 73.119 | Red | Do. |
| *Drugs, chemicals, medicines or cosmetics, n. o. s. | F. S | 73.153, 73.154 | Yellow | 100 pounds. |
| *Drugs, chemicals, medicines or cosmetics, n. o. s. | Oxy. M | 73.153, 73.154 | do | Do. |
| *Drugs, chemicals, medicines or cosmetics, n. o. s. | Cor. L | 73.244, 73.245 | White | 1 quart. |
| *Drugs, chemicals, medicines or cosmetics, n. o. s. | Pois. B | 73.345 73.346 | Poison | 55 gallons. |
| *Drugs, chemicals, medicines or cosmetics, n. o. s. (liquid). | Pois. B | 73.364, 73.365 | do | 200 pounds. |
| *Drugs, chemicals, medicines or cosmetics, n. o. s. (solid). | | | | |
| Drums, empty | See § 73.29 | | | |
| Dummy cartridges | See § 73.55 | | | |
| Dusts, by-product, poisonous. *See* Arsenical dust. | | | | |
| *Dynamite. See* High explosives. | | | | |
| Electric blasting caps—more than 1,000. | Expl. A | No exemption, 73.66 | | Not accepted. |
| Electric blasting caps—1,000 or less | Expl. C | No exemption, 73.106 | | See § 73.86. |
| Electric squibs | Expl. C | No exemption, 73.106 | | 150 pounds. |
| Electric storage batteries, wet. *See* Batteries, electric storage, wet. | | | | |
| Electrolyte (acid), battery fluid | Cor. L | 73.244, 73.257 | White | 5 gallons. |
| Electrolyte (acid) or alkaline corrosive battery fluid packed with storage batteries. | Cor. L | No exemption, 73.258 | do | 2 gallons. |
| Electrolyte (acid) or alkaline corrosive battery fluid packed with battery charger, radio current suppply device, or electronic equipment and actuating devices. | Cor. L | No. exemption, 73.259 | do | 6 quarts. |
| Empty cartridge bags with black powder igniters. | Expl. C | No exemption, 73.106 | | 150 pounds. |
| Empty cartridge cases, primed | Expl. C | No exemption, 73.107 | | Do. |
| *Enamel. *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| Engine starting fluid | F.G | No exemption, 73.304 | Red Gas | 60 pounds. |
| Engines, internal combustion | See § 73.120 | | | |
| *Eradicators, paint or grease, liquid | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Etching acid liquid, n.o.s | Cor. L | No exemption, 73.299 | White | 10 pounds. |
| Ethane | F. G | 73.306, 73.304 | Red Gas | 300 pounds. |
| Ether | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Ether, ethyl (*sulfuric*). *See* Ether. | | | | |
| Ethyl acetate | F. L | 73.118, 73.119 | do | Do. |
| Ethyl alcohol. *See* Alcohol, n.o.s. | | | | |
| Ethyl aldehyde. *See* Acetaldehyde. | | | | |
| Ethyl aluminum dichloride | F.L | No exemption, 73.134 | Red | 2 ounces. |
| Ethyl aluminum sesquichloride | F.L | No exemption, 73.134 | do | Do. |
| Ethyl chloride | F. L | No exemption, 73.123 | do | 300 pounds in cylinders, 15 pounds in other containers. |
| Ethyl dichlorosilane | F. L | No exemption, 73.135 | do | 10 gallons. |
| Ethyl chlorocarbonate. *See* Ethyl chloroformate. | | | | |
| Ethyl chloroformate | Cor. L | No exemption, 73.288 | White | 5 pints. |
| Ethyldichloroarsine | Pois. A | No exemption, 73.328 | Poison Gas | Not accepted. |
| ø Ethylene | F. G | 73.306, 73.304 | Red Gas | 300 pounds. |
| Ethylene dichloride | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Ethylene imine, inhibited | F. L | No exemption, 73.139 | do | 5 pints. |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
|---|---|---|---|---|
| Ethylene oxide | F. L. | No exemption, 73.124 | Red | 300 pounds in cylinders, 15 pounds in other containers. |
| Ethyl formate | F. L. | 73.118, 73.119 | do | 10 gallons. |
| Ethyl phenyl dichlorosilane | Cor. L. | No exemption, 73.280 | White | Do. |
| Ethyl mercaptan | F. L. | No exemption, 73.141 | Red | Do. |
| Ethyl methyl ether | F. L. | 73.118, 73.119 | do | Do. |
| Ethyl methyl ketone | F. L. | 73.118, 73.119 | do | Do |
| Ethyl nitrate (*nitric ether*) | F. L. | 73.118, 73.119 | do | Do. |
| Ethyl nitrite (*nitrous ether*) | F. L. | 73.118, 73.119 | do | Do. |
| Ethyl trichlorosilane | F. L. | No exemption, 73.135 | do | Do. |
| Explosive auto alarms | Expl. C. | No exemption, 73.111 | | 150 pounds. |
| Explosive bomb | Expl. A. | No exemption, 73.56 | | Not accepted. |
| Explosive cable cutters | Expl. C. | No exemption, 73.102 | | 150 pounds. |
| *Explosives, class A* | See § 73.53 | | | |
| *Explosives, class B* | See § 73.88 | | | |
| *Explosives, class C* | See § 72.100 | | | |
| *Explosive compositions* | Expl. A. or B. | No exemption, 73.53, 73.61 to 73.93. | | 10 pounds. |
| Explosive mine | Expl. A | No exemption, 73.56 | | Not accepted. |
| Explosive power device, class B | Expl. B | No exemption, 73.94 | Red# | 150 pounds. |
| Explosive power device, class C | Expl. C | No exemption, 73.102 | | Do. |
| Explosive projectile | Expl. A | No exemption, 73.56 | | Not accepted. |
| Explosive release device | Expl. C | No exemption, 73.102 | | 150 pounds. |
| Explosive rivets | Expl. C | No exemption, 73.100 (q) | | Not accepted. |
| *Explosives, samples for laboratory examination.* | See § 73.86 | | | |
| Explosive torpedo | Expl. A | No exemption, 73.56 | | Do. |
| *Extracts, liquid, flavoring | F. L. | 73.118, 73.119 | Red | 10 gallons. |
| Fabrics or fibers *with animal or vegetable oil.* *See* Fibers or fabrics *with animal or vegetable oil.* | | | | |
| Felt waste, wet. *See* Waste wool, wet. | | | | |
| Ferric arsenate, solid | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| Ferric arsenite, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Ferrous arsenate (*iron arsenate*), solid. | Pois. B | 73.364, 73.365 | do | Do. |
| *Fertilizer ammoniating solution *containing free ammonia.* | Nonf. G | 73.306, 73.304, 73.314 | Green | 300 pounds. |
| Fertilizer, tankage. *See* Garbage, tankage. | | | | |
| Fiber, burnt | F. S | No exemption, 73.169 | Yellow | Not accepted. |
| Fibers or fabrics, with animal or vegetable oil. | F. S | No exemption, 73.170 | do | Do. |
| *Film, motion-picture and toy pieces of.* *See* Motion-picture film, toy and motion-picture film scrap. | | | | |
| *Firecrackers.* *See* Common fireworks or Special fireworks. | | | | |
| *Firecracker salutes.* *See* Common fireworks or Special fireworks. | | | | |
| Fire extinguisher charges | Cor. L. | 73.261 | White | 1 gallon. |
| Fire extinguisher charges containing not to exceed 50 grains of propellant explosives per unit. | See § 73.88 (f) Note 1. | | | |
| Fire extinguishers | Nonf. G | 73.306 | Green | 300 pounds. |
| Fireworks, common | Expl. C | No exemption, 73.100 (r), 73.108. | | 200 pounds. |
| *Fireworks, exhibition display pieces.* *See* Special fireworks. | | | | |
| Fireworks, special | Expl. B | No exemption, 73.88 (d), 73.91. | Special Fireworks## | Do. |
| Fish meal. *See* Fish scrap or fish meal. | | | | |
| Fish scrap or fish meal *containing less than 6 percent or more than 12 percent moisture.* | F. S | No exemption, 73.171 | Yellow | Not accepted. |
| *Flame retardant compound, liquid | Cor. L. | 73.244, 73.291 | White | 10 gallons. |
| Flammable liquids, n. o. s. | F. L. | 73.118, 73.119 | Red | Do. |
| Flammable solids, n. o. s. | F. S. | 73.153, 73.154 | Yellow | 25 pounds. |
| *Flares.* *See* Common fireworks. | | | | |
| *Flares, aeroplane.* *See* Special fireworks. | | | | |
| *Flash cartridges.* *See* Special fireworks and Low explosives. | | | | |
| *Flash crackers.* *See* Common fireworks or Special fireworks. | | | | |
| *Flash powder.* *See* Special fireworks and Low explosives. | | | | |
| *Flash sheets.* *See* Special fireworks and Low explosives. | | | | |
| Flexible linear shaped charges, metal clad. | Expl. C | No exemption, 73.104 | | 300 pounds. |
| Flue dust, poisonous | Pois. B | 73.364, 73.368 | Poison | 200 pounds. |
| Fluorine | F. G | 73.306, 73.302 | Red Gas | 6 pounds. |
| Fluosulfonic acid | Cor. L. | No exemption, 73.274 | White | 10 pints. |
| Formic acid | Cor. L. | 73.244, 73.245, 73.289 | do | 5 gallons. |
| Formic acid, solution | Cor. L. | 73.244, 73.245, 73.289 | do | Do. |
| *Fulminate of mercury, dry* | Forbidden explosive. | | | Forbidden explosive. |
| *Fulminate of mercury, wet.* *See* Initiating explosive. | | | | |
| *Fumigants | See § 73.152 (a) Note 1. | | | |
| *Furniture polish. *See* *Polishes, metal, stove, furniture, and wood, liquid. | | | | |
| *Furniture or wood stains, liquid. *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| Fuse igniters | Expl. C | No exemption, 73.106 | | 150 pounds. |
| *Fuse, instantaneous.* *See* Instantaneous fuse. | | | | |
| Fuse lighters | Expl. C | No exemption, 73.106 | | Do. |
| Fuse, mild detonating, metal clad. *See* Mild detonating fuse, metal clad. | | | | |
| *Fuse, safety.* *See* Safety fuse. | | | | |
| *Fusees.* *See* Railway or highway fusees. | | | | |
| Fuzes, combination | Expl. C | No exemption, 73.105 | | 150 pounds. |
| Fuzes, detonating class A explosives | Expl. A | No exemption, 73.69 | | Not accepted. |
| Fuzes, detonating, class A explosives, radioactive. | Expl. A | No exemption, 73.69 | | Do. |
| Fuzes, detonating, class C explosives. | Expl. C | No exemption, 73.113 | | 150 pounds. |
| Fuzes, percussion | Expl. C | No exemption, 73.105 | | Do. |
| Fuzes, time | Expl. C | No exemption, 73.105 | | Do. |
| Fuzes, tracer | Expl. C | No exemption, 73.105 | | Do. |
| Garbage tankage *containing less than 8 percent of moisture.* | F.S | No exemption, 73.209 | Yellow | Not accepted. |
| Gas cylinders, empty | See § 73.29 | | | |
| *Gas drips, hydrocarbon | F. L. | 73.118, 73.119 | Red | 10 gallons. |
| Gas identification sets | Pois. A. and C. | No exemption, 73.331 | Poison Gas | See § 73.331. |
| *Gas mine.* *See* Explosive mine | See § 73.56(d). | | | |
| Gasoline | F. L. | 73.118, 73.119 | Red | 10 gallons. |
| *Gelatine dynamite.* *See* High explosives. | | | | |
| Gold 198 | Pois. D | 73.302, 73.303 | Poison Radioactive materials. | See § 73.391 (c). |
| *Gold paint. *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| Grenades, empty, primed | Expl. C | No exemption, 73.107 | | 150 pounds. |
| *Grenades, hand.* *See* Hand grenades. | | | | |
| *Grenades, hand or rifle, explosive, with gas, smoke or incendiary material.* *See* Hand or Rifle grenades. | | | | |
| *Grenades, hand or rifle, with gas, smoke or incendiary material but without bursting charges.* | See §§ 73.88(d), 73.108, 73.330, 73.350. | | | |
| *Grenades, police.* *See* Police grenades poison gas class A. | | | | |
| *Grenades, rifle.* *See* Rifle grenades. | | | | |
| *Grenades, tear gas.* *See* Tear gas grenades. | | | | |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
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| Guanidine nitrate | Oxy. M | 73.153, 73.182 | Yellow | 100 pounds. |
| *Guanyl nitrosamino guanylidene hydrazine.* See Initiating explosive. | | | | |
| *Guanyl nitrosamino guanyl tetrazene.* See Initiating explosive. | | | | |
| *Guided missiles, with warheads.* See Rocket ammunition with explosive, illuminating, gas, incendiary or smoke projectile. | | | | |
| *Guided missiles without warheads.* See Rocket ammunition without projectile. | | | | |
| *Guncotton.* See High explosives. | | | | |
| Hafnium metal, dry, *mechanically produced, finer than 270 mesh particle size.* | F.S | No exemption, 73.214 | do | 75 pounds. |
| Hafnium metal, dry, *chemically produced, finer than 20 mesh particle size.* | F.S | No exemption, 73.214 | do | Do. |
| Hafnium metal, wet, *mechanically produced, finer than 270 mesh particle size.* | F.S | No exemption, 73.214 | do | 150 pounds. |
| Hafnium metal, wet, *chemically produced, finer than 20 mesh particle size.* | F.S | No exemption, 73.214 | do | Do. |
| Hair, wet | F. S | No exemption, 73.172 | do | Not accepted. |
| Hand grenades | Expl. A | No exemption, 73.56 | | Do. |
| Hand signal devices | Expl. C | No exemption, 73.108 | | 200 pounds. |
| Heaters for refrigerator cars, liquid fuel type. | F. L | 73.146 | | |
| Helium | Nonf. G | 73.306, 73.302, 73.314 | Green | 300 pounds. |
| Helium—oxygen mixture | Nonf. G | 73.306, 73.302 | do | Do. |
| Heptane | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Hexadecyltrichlorosilane | Cor. L | No exemption, 73.280 | White | Do. |
| Hexaethyl tetraphosphate and compressed gas mixture. | Pois. A | No exemption, 73.334 | Poison Gas | Not accepted. |
| Hexaethyl tetraphosphate, liquid | Pois. B | No exemption, 73.358 | Poison | 1 quart. |
| Hexaethyl tetraphosphate mixture, dry. | Pois. B | 73.377 | do | 200 pounds. |
| Hexaethyl tetraphosphate mixture, liquid. | Pois. B | 73.359 | do | 1 quart. |
| Hexafluorophosphoric acid | Cor. L | No exemption, 73.275 | White | 1 gallon. |
| Hexafluoropropylene | Nonf. G | 73.306, 73.304, 73.314, 73.315 | Green | 300 pounds. |
| Hexamethylene diamine solution | Cor. L | 73.244, 73.249, 73.292 | White | 10 gallons. |
| Hexane | F. L | 73.118, 73.119 | Red | Do. |
| Hexyl trichlorosilane | Cor. L | No exemption, 73.280 | White | Do. |
| High explosives | Expl. A | No exemption, 73.61 to 73.87 | | See § 73.86. |
| High explosives, liquid | Expl. A | No exemption, 73.62 | | Not accepted. |
| Highway fuses | Expl. C | No exemption, 73.108 | | 200 pounds. |
| *High wines.* See Alcohol or alcohol, n. o. s. | | | | |
| Hydraulic accumulators (*pressurized with nonflammable, nonliquefied compressed gas*). | See § 73.306 (e) (2). | | | |
| Hydrazine, anhydrous | Cor. L | No exemption, 73.276 | White | 5 pints. |
| Hydrazine solution containing 50 percent or less of water. | Cor. L | No exemption, 73.276 | do | Do. |
| Hydriodic acid | Cor. L | 73.244, 73.245 | do | 1 gallon. |
| Hydrobromic acid | Cor. L | 73.244, 73.262 | do | Do. |
| Hydrobromic acid, anhydrous. See Hydrogen bromide. | | | | |
| Hydrocarbon gas, liquefied | F. G | 73.306, 73.304, 73.314 | Red Gas | 300 pounds. |
| Hydrocarbon gas, nonliquefied | F. G | 73.306, 73.302 | do | Do. |
| Hydrochloric (*muriatic*) acid | Cor. L | 73.244, 73.263 | White | 10 pints. |
| Hydrochloric acid, anhydrous. See Hydrogen chloride. | | | | |
| Hydrochloric acid mixtures | Cor. L | 73.244, 73.263 | do | Do. |
| Hydrochloric acid solution, inhibited. | Cor. L | 73.244, 73.263 | do | Do. |
| Hydrocyanic acid, liquefied | Pois. A | No exemption, 73.332 | Poison Gas | Not accepted. |
| Hydrocyanic acid (*prussic*), liquid | Pois. A | No exemption, 73.332 | do | Do. |
| Hydrocyanic acid (*prussic*), unstabilized. | Not accepted | | | Do. |
| Hydrocyanic acid solutions | Pois. B | No exemption, 73.351 | Poison | 25 pounds. |
| Hydrofluoric acid | Cor. L | 73.244, 73.264 (a) | White | 10 pints. |
| Hydrofluoric acid, anhydrous | Cor. L | No exemption, 73.264 (b) | do | 110 pounds. |
| Hydrofluoric and sulfuric acids, mixtures. | Cor. L | No exemption, 73.290 | White | 10 pints. |
| Hydrofluosilicic acid | Cor. L | 73.244, 73.265 | do | 10 pints. |
| β Hydrogen | F. G | 73.306, 73.302, 73.314 | Red Gas | 300 pounds. |
| Hydrogen bromide | Nonf. G | 73.306, 73.304 | Green | Do. |
| Hydrogen chloride | Nonf. G | 73.306, 73.304, 73.306 | do | Do. |
| Hydrogen, liquefied | F. G | No exemption, 73.316 | Red Gas | Not accepted. |
| Hydrogen peroxide (*hydrogen dioxide*) *solution in water containing over 8 percent hydrogen peroxide by weight.* | Cor. L | 73.244, 73.266 | White | 1 gallon. |
| Hydrogen sulfide | F. G | 73.306, 73.304, 73.314 | Red Gas | 300 pounds. |
| Hypochlorite solutions containing more than 7 percent available chlorine by weight. | Cor. L | 73.277 | White | 4 gallons. |
| Igniter cord | Expl. C | No exemption, 73.100 (s) | | 150 pounds. |
| Igniter fuse-metal clad | Expl. C | No exemption, 73.106 | | Do. |
| Igniters, jet thrust (*jato*) class B explosives. | Expl. B | No exemption, 73.92 | Red | 550 pounds. |
| Igniters, jet thrust (*jato*), class A explosives. | Expl. A | No exemption, 73.79 | None | Not accepted. |
| Igniters | Expl. C | No exemption, 73.106 | | 150 pounds. |
| *Illuminating projectiles fuzed or not fuzed, with expelling charges.* See Special fireworks. | | | | |
| *Inflammable liquids, n. o. s.* See Flammable liquids, n. o. s. | | | | |
| *Inflammable solids, n. o. s.* See Flammable solids, n. o. s. | | | | |
| Initiating explosive | Expl. A | No exemption, 73.70 to 73.78 incl. | | Not accepted. |
| *Diazodinitrophenol* | | No exemption, 73.70 | | |
| *Fulminate of mercury* | | No exemption, 73.71 | | |
| *Guanyl nitrosamino guanylidene hydrazine.* | | No exemption, 73.72 | | |
| *Lead azide, dextrinated type only* | | No exemption, 73.73 | | |
| *Lead mononitroresorcinate* | | No exemption, 73.70 | | |
| *Lead styphnate (lead trinitroresorcinate).* | | No exemption, 73.74 | | |
| *Nitro mannite* | | No exemption, 73.75 | | |
| *Nitrosoguanidine* | | No exemption, 73.76 | | |
| *Pentaerythrite tetranitrate* | | No exemption, 73.77 | | |
| *Tetrazene (guanyl nitrosamino guanyl tetrazene).* | | No exemption, 73.78 | | |
| *Ink | F. L | 73.118, 73.144 | Red | 10 gallons. |
| *Insecticide, dry | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| *Insecticide, liquid | Pois. B | 73.345, 73.346 | do | 55 gallons. |
| Insecticide, liquefied gas | Nonf. G | 73.306, 73.304 | Green | 300 pounds. |
| *Insecticide, liquid (*vermin exterminator*). | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Instantaneous fuse | Expl. C | No exemption, 73.100 (m) | | 150 pounds. |
| Iodine monochloride | Cor. L | No exemption, 73.293 | White | 1 quart. |
| Iridium 192 | Pois. D | 73.392, 73.393 | Poison radioactive materials, red. | 300 curies. See § 73.391 (c). |
| Iron mass, spent | F. S | No exemption, 73.174 | Yellow | Not accepted. |
| Iron sponge *not properly oxidized* | F. S | No exemption, 73.174 | do | Do. |
| Iron sponge, spent | F. S | No exemption, 73.174 | do | Do. |
| *Isobutane.* See Liquefied petroleum gas. | | | | |
| *Isobutylene.* See Liquefied petroleum gas. | | | | |
| Isooctane | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Isooctene | F. L | 73.118, 73.119 | do | Do. |
| Isopentane | F. L | 73.118, 73.119 | do | Do. |
| Isoprene | F. L | 73.118, 73.119 | do | Do. |
| *Isopropanol | F. L | 73.118, 73.119 | do | Do. |
| Isopropyl acetate | F. L | 73.118, 73.119 | do | Do. |
| Isopropyl mercaptan | F. L | No exemption, 73.141 | do | Do. |
| Isopropyl percarbonate, stabilized | Cor. L | No exemption, 73.282 | White | Not accepted. |
| Isopropyl percarbonate, unstabilized. | F. S | No exemption, 73.218 | Yellow | Do. |
| *Jet thrust igniters.* See Igniters, jet thrust. | | | | |
| Jet thrust unit (*jato*), class A explosives. | Expl. A | No exemption, 73.79 | | Do. |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
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| Jet thrust unit (*jato*), class B explosives. | Expl. B | No exemption, 73.92 | Red§ | 550 pounds. |
| *Kegs, reused* | See § 73.28 | | | |
| *Lacquer. *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| *Lacquer base, liquid. *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| *Lacquer base or lacquer chips, dry | F. S | 73.153, 73.175 | Yellow | 100 pounds. |
| *Lacquer base or lacquer chips, plastic (*wet with alcohol or solvent*). | F. L | 73.118, 73.127 | Red | 25 pounds. |
| *Lacquer removing, reducing and thinning compounds. *See* *Compounds, lacquer, paint, or varnish removing, reducing, or thinning, liquid. | | | | |
| Lauroyl peroxide | Oxy. M | 73.153 (b), 73.157, 73.158 | Yellow | Do. |
| Lead arsenate, solid | Pois. B | 73.364, 73.367 | Poison | 200 pounds. |
| Lead arsenite, solid | Pois. B | 73.364, 73.365 | do | Do. |
| *Lead azide.* *See* Initiating explosive. | | | | |
| Lead cyanide | See § 73.370 | | | |
| *Lead mononitroresorcinate.* *See* Initiating explosive. | | | | |
| Lead nitrate | Oxy. M | 73.153, 73.182 | Yellow | 100 pounds. |
| *Lead styphnate (lead trinitroresorcinate).* *See* Initiating explosive. | | | | |
| *Leather bleach | F. L | 73.118, 73.119 | Red | 10 gallons. |
| *Leather dressing | F. L | 73.118, 73.119 | do | Do. |
| Lewisite | Pois. A | No exemption, 73.328 | Poison Gas | Not accepted. |
| Lighter fluid. *See* Cigar and cigarette lighter fluid. | | | | |
| §Liquefied carbon dioxide. *See* Carbon dioxide, liquefied. | | | | |
| Liquefied carbon dioxide gas (mining device). *See* Carbon dioxide gas, liquefied (mining device). | | | | |
| Liquefied hydrocarbon gas | F. G | 73.306, 73.304, 73.314 | Red Gas | 300 pounds. |
| Liquefied nonflammable gases *charged with nitrogen, carbon dioxide, or air.* | Nonf. G | 73.306, 73.304 | Green | Do. |
| §Liquefied petroleum gas | F. G | 73.306, 73.304, 73.314, 73.315 | Red Gas | Do. |
| *Liquids other than those classified as flammable, corrosive, or poisonous charged with nitrogen, carbon dioxide or air.* *See* Compressed gases, n. o. s. | | | | |
| Lithium aluminum hydride | F. S | No exemption, 73.206 | Yellow | 25 pounds. |
| Lithium aluminum hydride, ethereal. | F. L | No exemption, 73.137 | Red | 1 quart. |
| Lithium amide, powdered | F. S | 73.153, 73.168 | Yellow | 100 pounds. |
| Lithium ferro silicon | F.S | No exemption, 73.206 | do | 25 pounds. |
| Lithium hydride | F. S | No exemption, 73.206 | do | 25 pounds. |
| Lithium hydride in solid forms | F. S | No exemption, 73.206 | do | 100 pounds. |
| Lithium hypochlorite compounds, dry, containing more than 39 percent available chlorine. | Oxy. M | 73.153, 73.217 | do | 100 pounds. |
| Lithium metal | F. S | No exemption, 73.206 | do | 25 pounds. |
| Lithium metal, in cartridges | See § 73.206 | | | |
| Lithium peroxide | Oxy. M | 73.153 (a), 73.154 | Yellow | 100 pounds. |
| Lithium silicon | F. S | No exemption, 73.206 | do | 25 pounds. |
| London purple, solid | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| Low explosives | Expl. A | No exemption, 73.60 | | Not accepted. |
| Low blasting explosives. *See* Low explosives. | | | | |
| Machines or apparatus | See §§ 73.130, 73.306. | | | |
| Magnesium arsenate, solid | Pois. B | 73.364, 73.367 | Poison | 200 pounds. |
| Magnesium dross | See § 73.173 | | | |
| *Magnesium, metallic, powdered, pellets, turnings, or ribbon. | F.S | 73.153, 73.220 | Yellow | 100 pounds. |
| Magnesium nitrate | Oxy. M | 73.153, 73.182 | do | Do. |
| Magnesium perchlorate | Oxy. M | 73.153, 73.154 | do | Do. |
| Magnesium peroxide, solid | Oxy. M | 73.153, 73.154 | do | Do. |
| Magnesium scrap (borings, clippings, shavings, sheets, turnings or scalpings). | F.S | 73.153, 73.220 | do | Do. |
| Magnesium-thorium alloys in formed shapes (*not powdered, and which shall contain not more than 4 percent nominal thorium 232*). | Pois. D | 73.302(e) | Radioactive material, Group 1, Red. | See § 73.391(b). |
| *Matches, block.* *See* Strike-anywhere matches. | F. S | No exemption, 73.176 | Yellow | 50 pounds. |
| Matches, book, card, or strike-on-box, *with other articles.* | See § 73.176 (g) | | | |
| Matches, book, card, or strike-on-box. | See § 73.176 (g) | | | |
| Matches, strike-anywhere | F. S | No exemption, 73.176 | Yellow | Do. |
| *Medicines, n. o. s. *See* *Drugs, chemicals, medicines, or cosmetics, n. o. s. | | | | |
| Memtetrahydro phthalic anhydride. | Cor. L | No exemption, 73.298 | White | 1 quart. |
| *Mercaptan mixtures, aliphatic | F. L | No exemption, 73.141 | Red | 10 gallons. |
| *Mercurial liquid, n.o.s. | Pois. B | 73.345, 73.346 | Poison | 55 gallons. |
| Mercuric acetate | Pois. B | 73.364, 73.365 | do | 200 pounds. |
| Mercuric-ammonium chloride, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercuric benzoate, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercuric bromide, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercuric chloride. *See* Mercury bichloride, solid. | | | | |
| Mercuric cyanide, solid | Pois. B | 73.370 | do | Do. |
| Mercuric iodide, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercuric iodide solution | Pois. B | 73.345, 73.346 | do | 55 gallons. |
| Mercuric oleate, solid | Pois. B | 73.334, 73.365 | do | 200 pounds. |
| Mercuric oxide (red), solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercuric oxide (yellow), solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercuric oxycyanide, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercuric-potassium cyanide, solid | Pois. B | 73.364, 73.365, 73.370 | do | Do. |
| Mercuric-potassium iodide, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercuric salicylate, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercuric subsulfate, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercuric sulfate, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercuric sulfo cyanate, solid (mercuric thiocyanate). | Pois. B | 73.364, 73.365 | do | Do. |
| Mercurol (*mercury nucleate*), solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercurous bromide, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercurous gluconate, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercurous iodide, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercurous nitrate, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercurous oxide, black, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercurous sulfate, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercury acetate, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercury bichloride, solid (mercuric chloride). | Pois. B | 73.364, 73.372 | do | Do. |
| Mercury bisulfate, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Mercury compounds, n. o. s. (solid) | Pois. B | 73.364, 73.365 | do | Do. |
| Mercury cyanide, solid | Pois. B | 73.370 | do | Do. |
| *Mercury fulminate.* *See* Initiating explosive. | | | | |
| *Metal keys, reused* | See § 73.28 | | | |
| *Metal polish. *See* *Polishes, metal, stove, furniture and wood, liquid. | | | | |
| Metallic sodium or potassium. *See* Sodium or potassium, metallic. | | | | |
| Methanol (methyl alcohol). *See* Wood alcohol. | | | | |
| Methane | F. G | 73.306, 73.304 | Red Gas | 300 pounds. |
| Methyl acetate | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Methyl acetone | F. L | 73.118, 73.119 | do | Do. |
| Methylacetylene—15% to 20% propadiene mixture. | F.G | 73.306, 73.304, 73.314 | Red Gas | 300 pounds. |
| Methyl alcohol (methanol). *See* Wood alcohol. | | | | |
| Methyl aluminum sesquibromide | F.L | No exemption, 73.134 | Red | 2 ounces. |
| Methyl aluminum sesquichloride | F.L | No exemption, 73.134 | do | Do. |
| Methyl bromide mixture, liquid (*containing no class A poison*). | Pois. B | No exemption, 73.353 | Poison | 33 gallons. |
| Methyl bromide and chlorpicrin mixture, liquid. | Pois. B | No exemption, 73.353 | do | 55 gallons. |
| Methyl bromide and ethylene dibromide mixture, liquid. | Pois. B | No exemption, 73.353 | do | Do. |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
|---|---|---|---|---|
| Methyl bromide and nonflammable, nonliquefied compressed gas mixtures, liquid. | Pois. B | No exemption, 73.353 | Poison | 300 pounds. |
| Methyl bromide, liquid (*bromomethane*). | Pois. B | No exemption, 73.353 | do | 55 gallons. |
| § Methyl chloride | F. G | 73.306, 73.304, 73.314, 73.315 | Red Gas | 300 pounds. |
| Methyl chloride-methylene chloride mixture. | F.G | 73.306, 73.304, 73.314 | do | Do. |
| Methyl chloroformate | Cor. L | No exemption, 73.288 | White | 5 pints. |
| Methylchloromethyl ether, anhydrous. | F. L | No exemption, 73.143 | Red | Not accepted. |
| Methyldichlorarsine | Pois. A | No exemption, 73.328 | Poison Gas | Do. |
| Methyl dichlorosilane | F. L | No exemption, 73.136 | Red | 10 gallons. |
| Methyl ethyl ketone | F. L | 73.118, 73.119 | do | Do. |
| Methyl formate | F. L | 73.118, 73.119 | do | Do. |
| Methyl hydrate. See Alcohol or Alcohol, n. o. s. | | | | |
| Methylhydrazine | F. L | No exemption, 73.145 | Red | 5 pints. |
| Methyl iso-propenyl ketone, inhibited. | F. L | 73.118, 73.119 | do | 10 gallons. |
| Methyl magnesium bromide in ethyl ether in concentrations not over 40 percent. | F.L | No exemption, 73.134 | do | 2 ounces. |
| Methyl mercaptan | F.G | 73.302, 73.306, 73.314, 73.315 | Red Gas | 300 pounds. |
| Methyl methacrylate monomer | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Methyl parathion, liquid | Pois. B | No exemption, 73.358 | Poison | 1 quart. |
| Methyl parathion mixture, dry | Pois. B | 73.377 | do | 200 pounds. |
| Methyl parathion mixture, liquid | Pois. B | 73.359 | do | 1 quart |
| Methyltrichlorosilane | F. L | No exemption, 73.135 | Red | 10 gallons. |
| Methyl vinyl ketone, inhibited | F. L | 73.147 | do | Do. |
| Mild detonating fuse, metal clad | Expl. C | No exemption, 73.104 | | 300 pounds. |
| *Mine rescue equipment* | See §§ 73.306 (a)(2) and 76.703(d). | | | |
| Mines, empty | See § 73.55 | | | |
| *Mines, explosive, with gas material.* See Explosive mine. | See § 73.55 (d) | | | |
| Mixed acid. *See* Nitrating (mixed) acid. | | | | |
| *Mixtures of hydrofluoric and sulfuric acids.* See Hydrofluoric and sulfuric acids, mixtures. | | | | |
| *Mixtures or solutions of liquefied nonflammable gases and liquids other than those classified as flammable, corrosive, or poisonous charged with nitrogen, carbon dioxide, or air.* See Compressed gases, n. o. s. | | | | |
| Monobromotrifluoromethane | Nonf. G | 73.306, 73.304, 73.314 | Green | 300 pounds. |
| Monochloroacetic acid, liquid | Cor. L | 73.244, 73.294 | White | 1 quart. |
| Monochloracetone, stabilized | Pois. C | No exemption, 73.354 | Tear Gas | 5 gallons. |
| Monochloracetone (unstabilized) | Not accepted | | | Not accepted. |
| Monochlorodifluoromethane | Nonf. G | 73.306, 73.304, 73.314, 73.315 | Green | 300 pounds. |
| Monochloroethylene. *See* Vinyl chloride. | | | | |
| Monochloropentafluoroethane | Nonf. G | 73.306, 73.304 | do | Do. |
| Monochlorotetrafluoroethane | Nonf. G | 73.306, 73.304, 73.314 | do | Do. |
| Monochlorotrifluoromethane | Nonf. G | 73.306, 73.304 | do | Do. |
| Monoethylamine | F.L | 73.118, 73.148 | Red | 10 gallons. |
| Monofluorophosphoric acid, anhydrous. | Cor. L | No exemption, 73.275 | White | 1 gallon. |
| Monomethylamine, anhydrous | F. G | 73.306, 73.304, 73.314, 73.315 | Red Gas | 300 pounds. |
| Monomethylamine, aqueous solution. | F. L | 73.118, 73.119 | Red | 10 gallons. |
| •Mortar stain, liquid | F. L | 73.118, 73.128 | do | 55 gallons. |
| § Motion-picture film, *nitrocellulose base, including mixed shipments with nonflammable film.* | F. S | No exemption, 73.177 | Yellow | 200 pounds |
| Motion-picture film, old and worn out (*nitrocellulose*). | F. S | No exemption, 73.178 | do | 200 pounds. |
| Motion-picture film, old and worn out (*slow-burning*). | See § 73.181 (a) (1). | | | |
| § Motion-picture outfits, toy | See § 73.191 (a) (4). | | | |
| § Motion-picture film (*processed, positive or negative, nitrocellulose*). | F. S | No exemption, 73.177 | Yellow | 200 pounds. |
| § Motion-picture film (*processed, positive or negative, slow-burning*). | See § 73.181 (a) (1). | | | |
| Motion-picture film scrap (*nitrocellulose*), samples of. | F. S | No exemption, 73.196 | Yellow | 25 pounds. |
| Motion-picture film scrap (*nitrocellulose*), *other than samples.* | F. S | No exemption, 73.196 | do | Not accepted. |
| Motion-picture film scrap (*slow-burning*). | See § 73.181 (a) (2). | | | |
| § Motion-picture film, toy, (*nitrocellulose*). | F. S | No exemption, 73.179 | Yellow | 200 pounds. |
| § Motion-picture film, toy (*slow-burning*). | See § 73.181 (a) (1). | | | |
| § Motion-picture film, toy pieces (*nitrocellulose*). | See § 73.181 (a) (3). | | | |
| Motion-picture film, unexposed (*nitrocellulose base*). | F. S | 73.180 | Yellow## | 250 pounds. |
| Motion-picture film, unexposed (*slow-burning*). | See § 73.181 (a) (1). | | | |
| Motorcycles | See § 73.120 | | | |
| Motor fuel antiknock compound | Pois. B | No exemption, 73.354 | Poison | 55 gallons. |
| •Motor fuel, n. o. s. | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Motors, internal combustion | See § 73.120 | | | |
| Muriatic acid. *See* Hydrochloric acid. | | | | |
| Mustard gas | Pois. A | No exemption, 73.328 | Poison Gas | Not accepted. |
| •Naphtha | F. L | 73.118, 73.119 | Red | 10 gallons. |
| •Naphtha distillate | F. L | 73.118, 73.119 | do | Do. |
| •Naphtha, petroleum. *See* •Petroleum naphtha. | | | | |
| •Naphtha, solvent | F. L | 73.118, 73.119 | do | Do. |
| *Natural gasoline.* See Gasoline. | | | | |
| Neohexane | F. L | 73.118, 73.119 | do | Do. |
| Neon gas | Nonf. G | 73.306, 73.302 | Green | 300 pounds. |
| *New explosives or explosive devices* | See §§ 73.51 (q), 73.86, and 74.502 (a) (8). | | | |
| Nickel carbonyl | F. L | No exemption, 73.126 | Red | Not accepted. |
| •Nickel catalyst, finely divided, activated or spent. | F. S | No exemption, 73.233 | Yellow | 100 pounds. |
| Nickel cyanide, solid | Pois. B | 73.370 | Poison | 200 pounds. |
| Nicotine hydrochloride | Pois. B | 73.345, 73.346 | do | 55 gallons. |
| Nicotine, liquid | Pois. B | 73.345, 73.346 | do | Do. |
| Nicotine salicylate | Pois. B | 73.364, 73.365 | do | 200 pounds. |
| Nicotine sulfate, liquid | Pois. B | 73.345, 73.346 | do | 55 gallons. |
| Nicotine sulfate, solid | Pois. B | 73.364, 73.365 | do | 200 pounds. |
| Nicotine tartrate | Pois. B | 73.364, 73.365 | do | Do. |
| Nitrate of aluminum. *See* Aluminum nitrate. | | | | |
| Nitrate of ammonia. *See* Ammonium nitrate. | | | | |
| *Nitrate of ammonias explosives.* *See* High explosives. | | | | |
| Nitrate of ammonia fertilizer. *See* Ammonium nitrate fertilizer, containing 90 percent or more ammonium nitrate with no organic coating. | | | | |
| Nitrate of barium. *See* Barium nitrate. | | | | |
| Nitrate of lead. *See* Lead nitrate. | | | | |
| Nitrate of potash. *See* Potassium nitrate. | | | | |
| Nitrate of soda. *See* Sodium nitrate. | | | | |
| Nitrate of soda and potash | Oxy. M | 73.153, 73.182 | Yellow | 100 pounds. |
| Nitrate of soda bags, empty, unwashed. *See* Bags, nitrate of soda, empty and unwashed. | | | | |
| Nitrate of strontia. *See* Strontium nitrate. | | | | |
| Nitrates, n. o. s. | Oxy. M | 73.153, 73.182 | do | Do. |
| Nitrating (mixed) acid | Cor. L | No exemption, 73.267 | White | 2½ pints. |
| Nitric acid | Cor. L | No exemption, 73.268 | do | 5 pints. |
| *Nitric ether.* *See* Ethyl nitrate. | | | | |
| Nitric oxide | Pois. A | No exemption, 73.337 | Poison Gas | Not accepted. |
| Nitrite of soda. *See* Sodium nitrite. | | | | |
| Nitrobenzol, liquid (*oil of mirbane*) | Pois. B | 73.345, 73.346 | Poison | 55 gallons. |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
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| Nitro carbo nitrate | Oxy. M | 73.153, 73.182 | Yellow | 100 pounds. |
| *Nitrocellulose, colloided, granular, flake or block, wet with alcohol or solvent.* See Wet nitrocellulose colloided, granular or flake—20 percent alcohol or solvent; or block—25 percent alcohol. | | | | |
| *Nitrocellulose, colloided, granular, or flake, wet with 20 percent water.* See Wet nitrocellulose, colloided, granular or flake—20 percent water. | | | | |
| *Nitrocellulose (collodion cotton), wet with water.* See Wet nitrocellulose—20 percent water. | | | | |
| *Nitrocellulose (collodion cotton), wet with alcohol or solvent.* See Wet nitrocellulose—30 percent alcohol or solvent. | | | | |
| *Nitrocellulose, dry.* See High explosives. | | | | |
| *Nitrocellulose flakes, wet with alcohol or solvent.* See Wet nitrocellulose flakes—20 percent alcohol or solvent. | | | | |
| Nitrochlorbenzene, ortho, liquid | Pois. B | 73.345, 73.346 | Poison | 55 gallons. |
| Nitrochlorbenzene, meta or para, solid. | Pois. B | 73.364, 73.374 | do | 200 pounds. |
| Nitrogen | Nonf. G | 73.306, 73.302, 73.314 | Green | 300 pounds. |
| Nitrogen dioxide, liquid | Pois. A | No exemption, 73.336 | Poison Gas | Not accepted. |
| *Nitrogen fertilizer solution | Nonf. G | 73.306, 73.304, 73.314 | Green | 300 pounds. |
| Nitrogen peroxide, liquid | Pois. A | No exemption, 73.336 | Poison Gas | Not accepted. |
| Nitrogen, pressurized liquid | Nonf. G | No exemption, 73.304 | Green | 300 pounds. |
| Nitrogen tetroxide, liquid | Pois. A | No exemption, 73.336 | Poison Gas | Not accepted. |
| Nitrogen tetroxide-nitric oxide mixtures containing up to 33.2 percent weight nitric oxide. | Pois. A | No exemption, 73.336 | do | Do. |
| *Nitroglycerin, liquid* | See § 73.51 (d) | | | |
| *Nitroglycerin liquid, desensitized.* See High Explosive, liquid. | | | | |
| Nitroglycerin, spirits of. *See* Spirits of nitroglycerin. | | | | |
| Nitrohydrochloric acid | Cor. L | No exemption, 73.278 | White | 5 pints. |
| Nitrohydrochloric acid, diluted | Cor. L | do | do | Do. |
| *Nitro mannite.* See Initiating explosive. | | | | |
| *Nitroguanidine, dry.* See High explosives. | | | | |
| *Nitroguanidine, wet with water* See Wet nitroguanidine—20 percent water. | | | | |
| *Nitrosoguanidine.* See Initiating explosive. | | | | |
| *Nitrostarch, dry.* See High explosives. | | | | |
| *Nitrostarch, wet with alcohol or solvent.* See Wet nitrostarch—30 percent alcohol or solvent. | | | | |
| *Nitrostarch, wet with water.* See Wet nitrostarch — 20 percent water. | | | | |
| Nitrosyl chloride | Nonf. G | 73.306, 73.304, 73.314 | Green | 300 pounds. |
| *Nitrourea.* See High explosives. | | | | |
| ∅ Nitrous oxide | Nonf. G | 73.306, 73.304, 73.315 | do | Do. |
| Nitroxylol | Pois. B | 73.345, 73.346 | Poison | 55 gallons. |
| *Nonliquefied gases.* See Compressed gases, n. o. s. | | | | |
| Nonliquefied hydrocarbon gas | F. G | 73.306, 73.302 | Red Gas | 300 pounds. |
| Nonyl trichlorosilane | Cor. L | No exemption, 73.280 | White | 10 gallons. |
| Octadecyltrichlorosilane | Cor. L | No exemption, 73.280 | do | 10 gallons. |
| Octyl trichlorosilane | Cor. L | do | do | Do. |
| *Oil, described as* oil, oil, n. o. s., petroleum oil, or petroleum oil, n. o. s. | F. L | 73.118, 73.119 | Red | Do. |
| *Oil of mirbane.* See Nitrobenzol, liquid. | | | | |
| *Oil of vitriol.* See Sulfuric acid. | | | | |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
|---|---|---|---|---|
| Oil well cartridges | Expl. C | No exemption, 73.112 | | 150 pounds. |
| Oleum | Cor. L | 73.244, 73.272 | White | 10 pints. |
| *Organic phosphate compound, liquid, n.o.s. | Pois. B | No exemption, 73.358 | Poison | 1 quart. |
| *Organic phosphate compound mixtures, liquid n.o.s. | do | 73.359 | do | Do. |
| *Organic phosphate compound, mixtures, dry, n.o.s. | do | 73.377 | do | 200 pounds. |
| *Organic phosphates, n.o.s. mixed with compressed gas. | Pois. A | No exemption, 73.334 | Poison Gas | Not accepted. |
| Ortho-nitroaniline | Pois. B | 73.364, 73.373 | Poison | 200 pounds. |
| Oxide, spent. *See* Spent oxide. | | | | |
| Oxidizing material, n. o. s | Oxy. M | 73.153, 73.154 | Yellow | 25 pounds. |
| *Oxidizing materials with other articles—fumigants.* | See § 73.152 (a) Note 1. | | | |
| ∅ Oxygen | Nonf. G | 73.306, 73.302, 73.314 | Green | 300 pounds. |
| Oxygen, pressurized liquid | Nonf. G | No exemption, 73.304 | do | Do. |
| *Paint driers, liquid | F. L | 73.118, 73.128 | Red | 55 gallons. |
| *Paint, enamel, lacquer, stain, shellac, varnish, aluminum, bronze, gold, wood filler, liquid, and lacquer base liquid. | F. L | 73.118, 73.128 | do | Do. |
| *Paint, lacquer and varnish removing, reducing or thinning compounds. *See* *Compounds, lacquer, paint, or varnish, reducing or thinning liquid, etc. | | | | |
| *Paper cap ammunition for toy pistols.* See Toy caps. | | | | |
| *Paper caps.* See Toy caps. | | | | |
| Paper stock, wet | F. S | No exemption, 73.185 | Yellow | Not accepted. |
| Paper waste, wet. *See* Waste paper, wet. | | | | |
| Para chlorobenzoyl peroxide. *See* Chlorobenzoyl peroxide, (para). | | | | |
| Paramenthane hydroperoxide | Oxy. M | 73.153(b), 73.224 | do | 1 quart. |
| Paranitraniline (paranitroaniline), solid. | Pois. B | 73.364, 73.373 | Poison | 200 pounds. |
| Parathion and compressed gas mixture. | Pois. A | No exemption, 73.334 | Poison Gas | Not accepted. |
| Parathion, liquid | Pois. B | No exemption, 73.358 | Poison | 1 quart. |
| Parathion, mixture, dry | Pois. B | 73.377 | do | 200 pounds. |
| Parathion, mixture, liquid | Pois. B | 73.359 | do | 1 quart. |
| Paris green, solid | Pois. B | 73.364, 73.367 | do | 200 pounds. |
| Pentaborane | F. L | No exemption, 73.138 | Red | Not accepted. |
| Pentane | F. L | 73.118, 73.119 | do | 10 gallons. |
| Pentane, methyl | F. L | 73.118, 73.119 | do | Do. |
| *Pentaerythrite tetranitrate.* See Initiating explosive. | | | | |
| *Pentolite, dry.* See High explosives. | | | | |
| Peracetic acid | Oxy. M | 73.223 | Yellow | 5 pints. |
| Perchlorate of ammonia. *See* Ammonium perchlorate. | | | | |
| Perchlorate of potash. *See* Potassium perchlorate. | | | | |
| Perchlorates, n. o. s | Oxy. M | 73.153, 73.154 | do | 100 pounds. |
| Perchloric acid *in excess of 72 percent* | See § 73.269 | | | |
| Perchloric acid *not in excess of 72 percent.* | Cor. L | 73.244, 73.269 | White | 7 pounds. |
| Perchloro-methyl-mercaptan | Pois. B | 73.345, 73.360 | Poison | 10 pounds. |
| Percussion caps | Expl. C | No exemption, 73.107 | | 150 pounds. |
| Percussion fuzes | Expl. C | No exemption, 73.105 | | Do. |
| Permanganate of potash | Oxy. M | 73.153, 73.154, 73.194 | Yellow | 100 pounds. |
| Permanganate of soda | Oxy. M | 73.153, 73.154 | do | Do. |
| Permanganates, n. o. s | Oxy. M | 73.153, 73.154 | do | Do. |
| Peroxide of sodium. *See* Sodium peroxide. | | | | |
| Peroxides, organic, liquids or solutions, n.o.s. | F.L | No exemption, 73.119(m) | Red | 1 quart. |
| Peroxides, organic, solution, liquid, n.o.s. | Oxy. M | 73.153, 73.221 | Yellow | 1 quart. |
| Petroleum, crude. *See* Crude oil. | | | | |
| *Petroleum distillate | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Petroleum ether | F. L | 73.118, 73.119 | do | Do. |
| Petroleum gas, liquefied. *See* Liquefied petroleum gas. | | | | |
| *Petroleum naphtha | F. L | 73.118, 73.119 | do | Do. |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
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| Phenol. *See* Carbolic acid. | | | | |
| Phenylcarbylamine chloride | Pois. A | No exemption, 73.328 | Poison Gas | Not accepted. |
| Phenyldichlorarsine, liquid | Pois. B | No exemption, 73.355 | Poison | 30 gallons. |
| Phenyl trichlorosilane | Cor. L | No exemption, 73.280 | White | 10 gallons. |
| Phosgene (*diphosgene*) | Pois. A | No exemption, 73.333 | Poison Gas | Not accepted. |
| Phosphoric anhydride | F. S | No exemption, 73.188 | Yellow | 100 pounds. |
| Phosphorus, amorphous, red | F. S | No exemption, 73.189 | do | 11 pounds. |
| Phosphorous oxybromide | Cor. L | No exemption, 73.271 | White | 1 quart. |
| Phosphorus oxychloride | Cor. L | No exemption, 73.271 | do | Do. |
| Phosphorus pentachloride | F. S | No exemption, 73.191 | Yellow | 5 pounds. |
| Phosphorus sesquisulfide | F. S | No exemption, 73.225 | do | 11 pounds. |
| Phosphorus tribromide | Cor. L | No exemption, 73.270 | White | 1 quart. |
| Phosphorus trichloride | Cor. L | No exemption, 73.271 | do | Do. |
| Phosphorus, white or yellow, dry | F. S | No exemption, 73.190 (d) and (e). | Yellow | Not accepted |
| Phosphorus, white or yellow, in water. | F. S | No exemption, 73.190 (b) and (c). | do | 25 pounds. |
| Photographic film scrap, X-ray film scrap. | F. S | No exemption, 73.195 | do | See § 73.196. |
| *Photographic flash powder. See* Special fireworks or Low explosives. | | | | |
| *Picrates, dry. See* High explosives. | | | | |
| *Picrate of ammonia. See* High explosives. | | | | |
| *Picric acid, dry. See* High explosives. | | | | |
| *Picric acid, wet, not exceeding 16 ounces.* | See § 73.192 | | | |
| *Picric acid, wet, with not less than 10 percent water, over 16 pounds. See* High explosives. | | | | |
| Picric acid, wet, with not less than 10 percent water, *in excess of 16 ounces but not exceeding 16 pounds.* | F. S | No exemption, 73.193 | Yellow | 25 pounds. |
| *Pinwheels. See* Common fireworks. | | | | |
| *Plastic solvent, n. o. s | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Poisonous liquid or gas, n. o. s | Pois. A | No exemption, 73.328 | Poison Gas | Not accepted. |
| Poisonous liquids, n. o. s | Pois. B | 73.345, 73.346 | Poison | 55 gallons. |
| Poisonous liquids, n. o. s | Pois. C | No exemption, 73.382 | Tear Gas | 75 pounds. |
| Poisonous solids, n. o. s | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| Poisonous solids, n. o. s | Pois. C | No exemption, 73.382 | Tear Gas | 75 pounds. |
| Police grenades, poison gas, class A | Pois. A | No exemption, 73.335 | Poison Gas | Not accepted. |
| *Polishes, metal, stove, furniture and wood, liquid. | F. L | 73.118, 73.120 | Red | 55 gallons. |
| **Polymerizable materials* | See § 73.21 (b) | | | |
| Potash, caustic, solution. *See* Caustic potash, liquid. | | | | |
| Potassium arsenate, solid | Pois. B | 73.364, 73.365 | Poison | 200 pounds, |
| Potassium arsenite, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Potassium bromate | Oxy. M | 73.153, 73.154 | Yellow | 100 pounds. |
| Potassium chlorate (*potash chlorate*). *See* Chlorate of potash. | | | | |
| Potassium cyanide. *See* Cyanide of potassium. | | | | |
| Potassium hydroxide solution. *See* Caustic potash, liquid. | | | | |
| Potassium, metallic | F. S | No exemption, 73.206 | do | 25 pounds. |
| Potassium, metallic liquid alloy | F. S | No exemption, 73.202 | do | 1 pound. |
| Potassium nitrate | Oxy. M | 73.153, 73.182 | do | 100 pounds. |
| Potassium nitrate mixed (fused) with sodium nitrite. | Oxy. M | 73.153, 73.183 | do | Do. |
| Potassium nitrite | Oxy. M | 73.153, 73.154 | do | Do. |
| Potassium perchlorate | Oxy. M | 73.153, 73.219 | do | Do. |
| Potassium permanganate. *See* Permanganate of potash. | | | | |
| Potassium peroxide | Oxy. M | No exemption, 73.154 | do | Do. |
| Potassium sulfide | F. S | 73.153, 73.207 | do | 300 pounds. |
| Potato spray (*arsenical*), liquid. *See* *Insecticide, liquid. | | | | |
| *Primers. See* Cannon, combination, or small-arm primers. | | | | |
| *Primers, detonating. See* Detonating primers. | | | | |
| *Projectiles, explosive. See* Explosive projectile. | | | | |
| *Projectiles, gas, nonexplosive. See Chemical Ammunition, class A, B, or C.* | | | | |
| *Projectiles, gas, smoke, or incendiary, with burster or booster with or without detonating fuze. See* Explosive projectile. | | | | |
| *Projectiles, illuminating, incendiary or smoke with expelling charge but without bursting charge. See* Special fireworks. | | | | |
| *Projectiles, sand-loaded, empty, or solid.* | See § 73.55 | | | |
| *Propane. See* Liquefied petroleum gas. | | | | |
| Propellant explosives, class A | Expl. A | No exemption, 73.64(d) | | See § 73.86. |
| Propellant explosives (liquid), class B. | Expl. B | No exemption, 73.93 | Red# | 10 pounds. |
| Propellant explosives (solid), class B. | do | do | do# | Do. |
| *Propellant explosives (solid), class B, and small-arms primers. See* Propellant explosives, class B. | | | | |
| Propellant explosives in water (*smokeless powder for cannon or small arms*). | Expl. B | No exemption, 73.93 | | Not accepted. |
| Propellant explosives in water unstable, condemned or deteriorated (*smokeless powder for cannon or small arms*). | Expl. B | No exemption, 73.93 | | Do. |
| *Propylalcohol. *See* Alcohol, n. o. s. | | | | |
| Propylene imine, inhibited | F.L | No exemption, 73.139 | Red | 5 pints. |
| Propyl mercaptan | F. L | No exemption, 73.141 | do | 10 gallons. |
| Propyl trichlorosilane | Cor. L | No exemption, 73.280 | White | Do. |
| Propylene. *See* Liquefied petroleum gas. | | | | |
| Propylene oxide | F.L | 73.118, 73.119 | Red | Do. |
| *Prussic acid. See* Hydrocyanic acid. | | | | |
| *Pyridine | F.L | 73.118, 73.119 | do | Do. |
| Pyroforic fuel | F.L | No exemption, 73.134 | do | 2 ounces. |
| Pyroforic solutions | do | No exemption, 73.134 | do | Do. |
| Pyro sulfuryl chloride | Cor. L | 73.244, 73.247 | White | 1 quart. |
| *Pyroxylin cement. *See* Cement, pyroxylin. | | | | |
| Pyroxylin plastic scrap | F. S | No exemption, 73.195, 73.196. | Yellow | See § 73.196. |
| Pyroxylin plastics, rods, sheets, rolls, tubes. | F. S | 73.197 | do## | 350 pounds. |
| *Pyroxylin solution | F. L | 73.118, 73.119 | Red | 10 gallons. |
| *Pyroxylin solvent, n. o. s | F. L | 73.118, 73.119 | do | Do. |
| *Radio current supply device with electrolyte (acid) or battery fluid.* | See § 73.250 | | | |
| Radioactive materials, n. o. s | Pois. D | 73.302, 73.303, 73.394 | Poison Radioactive materials (Blue or Red). | See § 73.301 (b) and (c). |
| Rags, oily | F. S | No exemption. 73.199 | Yellow | Not accepted. |
| Rags, wet | F. S | No exemption, 73.200 | do | Do. |
| Railway fuzees | Expl. C | No exemption, 73.108 | | 200 pounds. |
| Railway torpedoes | Expl. B | No exemption, 73.91 | Special fireworks.## | Do. |
| *Reducing compounds, paint, varnish, lacquer, etc. *See* *Compounds, lacquer, paint, or varnish, etc., removing, reducing or thinning, liquid. | | | | |
| *Refrigerant gas n.o.s.* | See §§ 73.314 (c) table Note 13, 73.315(a) table Note 9. | | | |
| Refrigerating machines | See § 73.130, 73.300. | | | |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
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| *Removing compounds, paint, varnish, lacquer, etc. *See* *Compounds, lacquer, paint, or varnish, etc., removing, reducing or thinning, liquid. | | | | |
| *Resin solution (*resin compound, liquid*). | F.L | 73.118, 73.119 | Red | 55 gallons. |
| Resinate of cobalt, precipitated. *See* Cobalt resinate, precipitated. | | | | |
| Rifle grenades | Expl. A | No exemption, 73.56 | | Not accepted. |
| *Rifle powder. See* Propellant explosives, class A, Propellant explosives, class B, or Black powder. | | | | |
| *Road asphalt or tar, liquid | F. L | 73.118, 73.131 | Red | 10 gallons. |
| *Rocket fireworks. See* Common fireworks. | | | | |
| Rocket ammunition with empty projectiles. | Expl. B | No exemption, 73.90 | | Not accepted. |
| Rocket ammunition with explosive projectiles. | Expl. A | No exemption, 73.57 | | Do. |
| Rocket ammunition with illuminating projectiles. | Expl. A | No exemption, 73.57 | | Do. |
| Rocket ammunition with gas projectiles. | Expl. A | No exemption, 73.57 | | Do. |
| Rocket ammunition with incendiary projectiles. | Expl. A | No exemption, 73.57 | | Do. |
| Rocket ammunition with inert-loaded projectiles. | Expl. B | No exemption, 73.90 | | Do. |
| Rocket ammunition with smoke projectiles. | Expl. A | No exemption, 73.57 | | Do. |
| Rocket ammunition with solid projectiles. | Expl. B | No exemption, 73.90 | | Do. |
| Rocket ammunition without projectiles. | Expl. B | No exemption, 73.90 | | Do. |
| *Rocket bodies, with electric primers or electric squibs.* | See § 73.55 | | | |
| Rocket heads. *See* Explosive projectiles. | | | | |
| *Roman candles. See* Common fireworks. | | | | |
| *Rough ammoniate tankages | F.S | No exemption, 73.210 | Yellow | Do. |
| *Rubber cement. *See* *Cement, rubber. | | | | |
| *Rubber scrap or rubber buffings | F. S | 73.153, 73.201 | do | 10 pounds. |
| *Rubber shoddy, regenerated rubber, or reclaimed rubber. | F. S | 73.153, 73.201 | do | Do. |
| *Rum, denatured | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Safety fuse | See §73.100 (o) | | | |
| Safety squibs | Expl. C | No exemption, 73.106 | | 150 pounds. |
| Saltpeter. *See* Potassium nitrate. | | | | |
| Saltpeter, Chile. *See* Sodium nitrate. | | | | |
| *Salutes. See* Common fireworks and Special fireworks. | | | | |
| *Samples of explosives* | See § 73.86 | | | |
| *Samples, New explosives* | See § 73.86 | | | |
| *Samples of explosives and explosive articles.* | See § 73.86 | | | |
| *Scheele's green. See* Copper arsenite. | | | | |
| *Self-lighting cigarettes* | See § 73.21(d) | | | |
| *Self-propelled vehicles* | See §§ 73.120, 73.257, 73.306. | | | |
| *Shaped charges, commercial. See* High explosives. | See § 73.65 (h) | | | |
| *Shellac. *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| Shellac, liquid | F. L | 73.118, 73.126 | Red | 55 gallons. |
| *Shells, fireworks. See* Common fireworks or Special fireworks. | | | | |
| Ship distress signals. *See* Special fireworks. | | | | |
| Signal flares | Expl. C | No exemption, 73.106 | | 200 pounds. |
| Silicon chloride (*tetrachloride*) | Cor. L | 73.244, 73.247 | White | 1 gallon. |
| Silicon tetrafluoride | Nonf. G | 73.306, 73.302 | Green | 300 pounds. |
| Silver cyanide | See § 73.370 | | | |
| Silver nitrate | Oxy. M | 73.153, 73.182 | Yellow | 100 pounds. |
| *Sludge acid | Cor. L | No exemption, 73.248 | White | 1 quart. |
| Small-arms ammunition | Expl. C | No exemption, 73.101 | | 150 pounds. |
| Small-arms ammunition, tear gas cartridges. | Expl. C | No exemption, 73.101 | Tear gas | Do. |
| Small-arms primers | Expl. C | No exemption, 73.107 | | Do. |
| *Smoke generators. See Chemical ammunition, class B or C.* | | | | |
| Smoke candles | Expl. C | No exemption, 73.106 | | 200 pounds. |
| Smoke grenades | Expl. C | No exemption, 73.106 | | Do. |
| *Smokeless powder for cannon or small arms. See* Propellant explosives, class A, or propellant explosives, class B. | | | | |
| Smokeless powder for small arms (100 pounds or less). | See §73.88(f), §73.197a. | | | |
| Smoke pots | Expl. C | No exemption, 73.106 | | Do |
| *Smoke projectiles with bursting charges. See* Explosive projectile. | | | | |
| *Smoke projectiles with expelling charge but without bursting charge. See* Special fireworks. | | | | |
| Smoke signals | Expl. C | No exemption, 73.106 | | Do. |
| Soda amatol. *See* High explosives. | | | | |
| Sodium aluminate, liquid | Cor. L | 73.244, 73.249 | White | 10 gallons. |
| Sodium aluminum hydride | F.S | No exemption, 73.206 | Yellow | 25 pounds. |
| Sodium amide | F. S | No exemption, 73.206 | Yellow | Do. |
| Sodium azide | Pois. B | 73.364, 73.375 | Poison | 100 pounds. |
| Soda, caustic solution. *See* Caustic soda, liquid. | | | | |
| Sodium arsenate, solid | Pois. B | 73.364, 73.365, 73.368 | do | 200 pounds. |
| Sodium arsenite (solution), liquid | Pois. B | 73.345, 73.346 | do | 55 gallons. |
| Sodium bromate | Oxy. M | 73.153, 73.154 | Yellow | 100 pounds. |
| Sodium cacodylate, solid (*sodium dimethyl arsenate*). | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| Sodium chlorate (*soda chlorate*) | Oxy. M | 73.153, 73.163 | Yellow | 100 pounds. |
| Sodium chlorite | Oxy. M | No exemption, 73.169 | do | Do. |
| Sodium chlorite solution (not exceeding 40 percent sodium chlorite). | Cor. L | 73.244, 73.263 | White | 4 gallons. |
| Sodium cyanide. *See* Cyanide of sodium. | | | | |
| Sodium hydride | F. S | No exemption, 73.198 | Yellow | 25 pounds. |
| Sodium hydrosulfite | F. S | 73.153, 73.204 | do | 100 pounds. |
| Sodium hydroxide solution. *See* Caustic soda, liquid. | | | | |
| Sodium, metallic | F. S | No exemption, 73.206 | do | 25 pounds. |
| Sodium, metallic, dispersion in organic solvent. | F. S | No exemption, 73.230 | do | 10 pounds. |
| Sodium, metallic liquid alloy | F. S | No exemption, 73.202 | do | 1 pound. |
| Sodium methylate, dry | F. S | 73.153, 73.154 | do | 100 pounds. |
| *Sodium methylate, alcohol mixture. | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Sodium nitrate | Oxy. M | 73.153, 73.182 | Yellow | 100 pounds. |
| Sodium nitrite | Oxy. M | 73.153, 73.154, 73.234 | do | Do. |
| Sodium nitrite mixed (fused) with potassium nitrate. | Oxy. M | 73.153, 73.183 | do | Do. |
| Sodium nitrite mixtures (*sodium nitrate, sodium nitrite, and potassium nitrate*). | Oxy. M | 73.153, 73.234 | do | Do. |
| Sodium permanganate | Oxy. M | 73.153, 73.154 | do | Do. |
| Sodium peroxide | Oxy. M | No exemption, 73.187 | do | Do. |
| Sodium picramate wet with 20 percent of water. | F. S | No exemption, 73.205 | do | 25 pounds. |
| Sodium potassium alloys | F. S | No exemption, 73.206 | do | Do. |
| *Sodium sulfide | F. S | 73.153, 73.207 | do | 300 pounds. |
| *Solvents, n. o. s | F. L | 73.118, 73.119 | Red | 15 gallons. |
| *Sparklers. See* Common fireworks. | | | | |
| Special fireworks | Expl. B | No exemption, 73.88 (d), 73.91 | Special Fireworks## | 200 pounds. |
| Spent iron mass. *See* Iron mass, spent. | | | | |
| Spent iron sponge. *See* Iron sponge, spent. | | | | |
| Spent mixed acid | Cor. L | No exemption, 73.248 | White | 1 quart. |
| Spent oxide | F. S | No exemption, 73.174 | Yellow | Not accepted. |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
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| Spent sulfuric acid | Cor. L | No exemption, 73.243 | White | 1 quart. |
| Spirits of nitroglycerin | F.L. | No exemption, 73.133 | Red | 6 quarts. |
| Spirits of nitroglycerin *not exceeding 1 percent nitroglycerin by weight.* | F.L. | 73.118, 73.133 | do | Do. |
| *Sporting powder. See* Black powder or Propellant explosives, class B explosives. | | | | |
| *Spray starting fluid. See* Engine starting fluid. | | | | |
| *Spreader cartridges. See* Special fire works. | | | | |
| *Squibs, electric or safety. See* Electric squibs or Safety squibs. | | | | |
| *Stain. *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| Starter cartridges, jet engine, class B explosives. | Expl. B | No exemption, 73.92 | do | 200 pounds. |
| Starter cartridges, jet engine, class C explosives. | Expl. C | No exemption, 73.102 | | 150 pounds. |
| Storage batteries, wet. *See* Batteries, electric storage, wet. | | | | |
| *Stores, ship or vessels* | See § 71.9 | | | |
| *Stove polish. *See* *Polishes, metal, stove, furniture and wood, liquid. | | | | |
| Strike-anywhere matches. *See* Matches, strike-anywhere. | | | | |
| Strike-on-box matches. *See* Matches, strike-on-box. | | | | |
| Strontium arsenite, solid | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| Strontium chlorate | Oxy. M | 73.153, 73.163 | Yellow | 100 pounds. |
| Strontium chlorate, wet | Oxy. M | 73.153, 73.163 (a) (6) | do | 200 pounds. |
| Strontium nitrate | Oxy. M | 73.153, 73.182 | do | 100 pounds. |
| Strontium peroxide | Oxy. M | 73.153 (a), 73.154 | do | Do. |
| Strychnine and salts thereof, solid | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| *Styphnate of lead. See* Initiating explosive. | | | | |
| Succinic acid peroxide | Oxy. M | 73.153 (b), 73.157, 73.158 | Yellow | 25 pounds. |
| Sulfide of sodium. *See* Sodium sulfide. | | | | |
| Sulfide of potassium. *See* Potassium sulfide. | | | | |
| Sulfur chloride (*mono and di*) | Cor. L | No exemption, 73.247 | White | 1 gallon. |
| § Sulfur dioxide | Nonf. G | 73.306, 73,304, 73.314, 73.315 | Green | 300 pounds. |
| Sulfur hexafluoride | Nonf. G | 73.306, 73.304 | do | Do. |
| Sulfur trioxide, stabilized | Cor. L | 73.244, 73.273 | White | 1 gallon. |
| Sulfuric acid (*oil of vitriol*) | Cor. L | 73.244, 73.272 | do | 10 pints. |
| Sulfuric acid, *fuming* (*oleum*) (*Nordhausen*). *See* Sulfuric acid. | | | | |
| Sulfuryl chloride | Cor. L | 73.244, 73.247 | do | 1 quart. |
| Supplementary charges (explosive) | Expl. A | No exemption, 73.69 | | Not accepted. |
| Tankage. *See* Garbage tankage. | | | | |
| *Tankage fertilizers | F.S. | No exemption, 73.209 | Yellow | Do. |
| *Tankages, rough ammoniate | F.S. | No exemption, 73.210 | do | Do. |
| *Tank car, containing residual phosphorus and filled with water or inert gas.* | See § 73.232 | | | |
| Tank cars, empty (last contents poisons, class A). | See § 74.562 (d) and (e). | | | |
| *Tank cars, gas (*mu not contain gases that combine chemically*).* | See § 73.301(a) | | | |
| *Tank truck, empty* | See § 73.29 | | | |
| *Tanks, empty* | See § 73.29 | | | |
| *Tar, liquid | F. L. | 73.118, 73.131 | Red | 10 gallons. |
| Tear gas candles | Pois. C | No exemption, 73.385 | Tear Gas | 75 pounds. |
| *Tear gas cartridges. See* Small-arms ammunition tear gas cartridges. | | | | |
| Tear gas grenades | Pois. C | No exemption, 73.385 | do | Do. |
| Tear gas material, liquid or solid, n.o.s. | Pois. C | No exemption, 73.382 | do | Do. |
| *Tertiary alcohol. *See* Alcohol, n.o.s. | | | | |
| Tertiary butylisopropyl benzene hydroperoxide. | Oxy. M | 73.153 (b), 73.224 | Yellow | 1 quart. |
| Tetraethyl dithio pyrophosphate and compressed gas mixture. | Pois. A | No exemption, 73.234 | Poison Gas | Not accepted. |
| Tetraethyl dithio pyrophosphate, liquid. | Pois. B | No exemption, 73.368 | Poison | 1 quart. |
| Tetraethyl dithio pyrophosphate, mixture, dry. | Pois. B | 73.377 | do | 200 pounds. |
| Tetraethyl dithio pyrophosphate, mixture, liquid. | Pois. B | 73.369 | do | 1 quart. |
| Tetraethyl pyrophosphate, liquid | Pois. B | No exemption, 73.368 | do | Do. |
| Tetraethyl pyrophosphate, mixture, dry. | Pois. B | 73.377 | do | 200 pounds. |
| Tetraethyl pyrophosphate, mixture, liquid. | Pois. B | 73.369 | do | 1 quart. |
| Tetraethyl lead, liquid | Pois. B | No exemption, 73.354 | do | 55 gallons. |
| Tetraethyl pyrophosphate and compressed gas mixture. | Pois. A | No exemption, 73.234 | Poison Gas | Not accepted. |
| Tetrafluoroethylene, inhibited | F. G | 73.306, 73.304 | Red Gas | 300 pounds. |
| Tetranitromethane | Oxy. M | No exemption, 73.203 | Yellow | 25 pounds. |
| *Tetrazene (guanyl nitrosamino guanyl tetrazene). See* Initiating explosive. | | | | |
| *Tetryl. See* High explosives. | | | | |
| Textile waste, wet | F. S | No exemption, 73.211 | do | Not accepted. |
| *Thallium salts, solid | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| Thallium sulfate, solid | Pois. B | 73.364, 73.365 | do | Do. |
| *Thinning compounds, paint, varnish, lacquer, etc. *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| *Thiocarbonyl chloride. See* Thiophosgene. | | | | |
| Thionyl chloride | Cor. L | No exemption, 73.247 | White | 1 gallon. |
| Thiophosgene (*thiocarbonyl chloride*). | Pois. B | No exemption, 73.356 | Poison | Do. |
| Thiophosphoryl chloride | Cor. L | No exemption, 73.271 | White | 1 quart. |
| Thorium metal, powdered | F. S | 73.226 | Yellow | 25 pounds. |
| Time fuses | Expl. C | No exemption, 73.105 | | 150 pounds. |
| Tin tetrachloride, anhydrous | Cor. L | 73.244, 73.247 | White | 1 quart. |
| Titanium metal powder, dry | F. S | No exemption, 73.206 | Yellow | 75 pounds. |
| Titanium metal powder, wet, with not less than 20 percent water. | F. S | No exemption, 73.206 | do | 150 pounds. |
| Titanium sulfate solution containing not more than 45 percent sulfuric acid. | Cor. L | 73.244, 73.297 | White | 1 gallon. |
| Titanium tetrachloride | Cor. L | 73.244, 73.247 | do | 10 gallons. |
| Toluol (*toluene*) | F. L. | 73.118, 73.119 | Red | Do. |
| *Torches. See* Common fireworks. | | | | |
| *Torpedoes, cap. See* Special fireworks. | | | | |
| *Torpedoes, empty* | See § 73.55 | | | |
| *Torpedoes, explosive. See* Explosive torpedoes. | | | | |
| *Torpedoes, railway or track. See* Railway torpedoes. | | | | |
| Toy caps | Expl. C | No exemption, 73.100 (p), 73.109. | | 150 pounds. |
| Toy propellant devices | Expl. C | No exemption 73.111 | | Do. |
| Toy smoke devices | Expl. C | No exemption, 73.111 | | Do. |
| *Toy torpedoes. See* Special fireworks. | | | | |
| Tracers | Expl. C | No exemption, 73.105 | | Do. |
| Tracer fuses | Expl. C | No exemption, 73.105 | | Do. |
| Tractors | See § 73.120 | | | |
| *Tractor or truck body with refrigerating or heating equipment on flat cars.* | See §§ 73.120(c), 73.306. | | | |
| Trick matches | Expl. C | No exemption, 73.111 | | Do. |
| Trick noise makers, explosive | Expl. C | No exemption, 73.111 | | Do. |
| Trichlorosilane | F.L. | No exemption, 73.136 | Red | 10 gallons. |
| Triisobutyl aluminum | F.L. | No exemption, 73.134 | do | 2 ounces. |
| Trimethylamine, anhydrous | F. G | 73.306, 73.304, 73.314, 73.315 | Red Gas | 300 pounds. |
| Trimethylamine, aqueous solution | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Trifluorochloroethylene | F. G | 73.306, 73.304, 73.314 | Red Gas | 300 pounds. |
| Trimethylchlorosilane | F. L | No exemption, 73.135 | Red | Do. |
| *Trinitrobenzene. See* High explosives. | | | | |

| Article | Classed as— | Exemptions and packing (see sec.) | Label required if not exempt | Maximum quantity in 1 outside container by rail express |
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| Trinitrobenzene, wet (*not to exceed 16 ounces*). | F. S | 73.212 | | 16 ounces. |
| Trinitrobenzoic acid, dry. *See* High explosives. | | | | |
| Trinitrobenzoic acid, wet, not exceeding 16 ounces. | See § 73.192 | | | |
| Trinitrobenzoic acid, wet with not less than 10 percent water, in excess of 16 ounces but not exceeding 25 pounds. | F. S | No exemption, 73.193 | Yellow | 25 pounds. |
| *Trinitrobenzoic acid, wet, with not less than 10 percent water, over 25 pounds.* *See* High explosives. | | | | |
| *Trinitroresorcinol.* *See* High explosives. | | | | |
| *Trinitrotoluene.* *See* High explosives. | | | | |
| Trinitrotoluene, wet (*not to exceed 16 ounces*). | F. S | 73.212 | | 16 ounces. |
| Tris-(1-aziridinyl) phosphine oxide. | Cor. L | 73.244, 73.299a | White | 1 gallon. |
| *Turpentine substitutes | F. L | 73.118, 73.119 | Red | 16 ounces. |
| Uranium, normal or depleted, in solid metal form (*not borings, chips, or pieces*). | Pois. D | 73.392(f) | Radioactive material, Group 1, Red. | See § 73.391(b). |
| *Urea nitrate wet with not less than 10 percent of water, over 25 pounds.* *See* High explosives. | | | | |
| Urea nitrate wet *with not less than 10 percent of water, in excess of 16 ounces but not exceeding 25 pounds.* | F. S | No exemption, 73.193 | Yellow | 25 pounds. |
| *Urea nitrate, dry.* *See* High explosives. | | | | |
| Urea nitrate, wet, *with not less than 10 percent water, not exceeding 16 ounces.* | See § 73.192 | | | 16 ounces |
| *Urea peroxide | Oxy. M | 73.183 (b), 73.227 | Yellow | 25 pounds. |
| *Varnish. *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| *Varnish driers. *See* *Paint driers, liquid. | | | | |
| *Varnish remover or reducer. *See* *Compounds, lacquer, paint, or varnish removing, reducing, or thinning, liquid. | | | | |
| *Varnish thinning compounds. *See* *Compounds, lacquer, paint, or varnish removing, reducing, or thinning, liquid. | | | | |
| Very signal cartridges | Expl. C | No exemption 73.108 | | 200 pounds. |
| Vinyl acetate | F.L | 73.118, 73.119 | Red | 10 gallons. |
| Vinyl chloride | F.G | 73.306, 73.304, 73.314, 73.315 | Red Gas | 300 pounds. |
| Vinyl fluoride, inhibited | F.G | 73.306, 73.304 | do | Do. |
| Vinylidene chloride, inhibited | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Vinyl methyl ether, inhibited | F. G | 73.306, 73.304, 73.314 | Red Gas | 20 pounds. |
| Vinyl trichlorosilane | F. L | No exemption, 73.135 | Red | 10 gallons. |
| War heads. *See* Explosive projectiles. | | | | |
| Waste paper, wet | F. S | No exemption, 73.186 | Yellow | Not accepted. |
| Waste textile, wet | F. S | No exemption, 73.211 | do | Do. |
| Waste wool, wet | F. S | No exemption, 73.213 | do | Do. |
| *Water treatment compound, liquid. | Cor. L | 73.244, 73.249 | White | 10 gallons. |
| *Weed killing compounds, liquid. *See* *Compounds, tree or weed killing, liquid. | | | | |
| Wet hair. *See* Hair, wet. | | | | |
| Wet nitrocellulose, colloided, granular or flake—20 percent alcohol or solvent; or block—25 percent alcohol. | F.L | 73.118, 73.127 | Red | 25 pounds. |
| Wet nitrocellulose, colloided, granular or flake—20 percent water. | F. S | 73.153, 73.184 | Yellow | 100 pounds. |
| Wet nitrocellulose flakes—20 percent alcohol or solvent. | F.L | 73.118, 73.127 | Red | 25 pounds. |
| Wet nitrocellulose—30 percent alcohol or solvent. | F. L | 73.118, 73.127 | do | Do. |
| Wet nitrocellulose—20 percent water. | F. S | 73.153, 73.184 | Yellow | 100 pounds. |
| Wet nitroguanidine—20 percent water. | F. S | 73.153, 73.184 | do | Do. |
| Wet nitrostarch—20 percent water | F. S | 73.153, 73.184 | do | Do. |
| Wet nitrostarch—30 percent alcohol or solvent. | F. L | 73.118, 73.127 | Red | 25 pounds. |
| Wet paper stock. *See* Paper stock, wet. | | | | |
| Wet rags. *See* Rags, wet. | | | | |
| Wet textile waste. *See* Waste textile, wet. | | | | |
| Wet waste paper. *See* Waste paper, wet. | | | | |
| Wet waste wool. *See* Waste wool, wet. | | | | |
| Wood alcohol (methanol, methyl alcohol). | F.L | 73.118, 73.125 | Red | 10 gallons. |
| *Wood filler. *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| *Wood polish. *See* *Polishes, metal, stove, furniture and wood, liquid. | | | | |
| *Wood stain, liquid. *See* *Paint, enamel, lacquer, stain, shellac, varnish, etc. | | | | |
| Wool waste, wet. *See* Waste wool, wet. | | | | |
| X-ray film (*nitrocellulose base*) | F. S | No exemption, 73.177 | Yellow | 200 pounds. |
| X-ray film (*slow-burning*) | See § 73.181 (a) (1). | | | |
| X-ray film scrap (*nitrocellulose base*), samples of. | F. S | No exemption, 73.196 | Yellow | 25 pounds. |
| X-ray film scrap (*nitrocellulose base*), other than samples. | F. S | No exemption, 73.195 | do | Not accepted. |
| X-ray film scrap (*slow-burning*) | See § 73.181 (a) (2). | | | |
| X-ray film, unexposed (*nitrocellulose base*). | F. S | 73.189 | Yellow## | 250 pounds. |
| *Xylol (*xylene*) | F. L | 73.118, 73.119 | Red | 10 gallons. |
| Xylyl bromide | Pois. C | No exemption, 73.382 | Tear Gas | 75 pounds. |
| Zinc ammonium nitrite | Oxy. M | No exemption, 73.228 | Yellow | 100 pounds. |
| Zinc arsenate | Pois. B | 73.364, 73.365 | Poison | 200 pounds. |
| Zinc arsenite, solid | Pois. B | 73.364, 73.365 | do | Do. |
| Zinc chlorate | Oxy. M | 73.153, 73.163 | Yellow | 100 pounds. |
| Zinc cyanide | See § 73.370 | | | |
| Zinc ethyl | F.L | No exemption, 73.134 | Red | 2 ounces. |
| Zinc nitrate. *See* Nitrates, n. o. s. | | | | |
| Zinc permanganate | Oxy. M | 73.153, 73.154 | Yellow | 100 pounds. |
| Zinc peroxide | Oxy. M | 73.153, 73.154 | do | Do. |
| Zirconium metal, dry, *mechanically produced, finer than 270 mesh particle size.* | F.S | No exemption, 73.214 | do | 75 pounds. |
| Zirconium metal, dry, *chemically produced, finer than 20 mesh particle size.* | F.S | No exemption, 73.214 | do | Do. |
| Zirconium metal, wet, *mechanically produced, finer than 270 mesh particle size.* | F.S | No exemption, 73.214 | do | 150 pounds. |
| Zirconium metal, wet, *chemically produced, finer than 20 mesh particle size.* | F.S | No exemption, 73.214 | do | Do. |
| Zirconium, metallic, solutions or mixture thereof, liquid. | F. L | No exemption, 73.140 | Red | 5 pounds. |
| Zirconium picramate, wet *with 20 percent of water.* | Oxy. M | No exemption, 73.216 | Yellow | 25 pounds. |
| Zirconium scrap (borings, clippings, shavings, sheets, or turnings). | F.S | 73.153, 73.220 | do | 100 pounds. |

## PART 73—SHIPPERS


Sec.
73.1 Purpose of the regulations in Parts 71–78 of this chapter.
73.2 Classification; dangerous articles.
73.3 Motor carrier regulations.
73.4 Water carrier regulations.
73.5 Shipments by rail express.
73.6 Shipments as baggage by rail.
73.7 United States Government shipments.
73.8 Canadian shipments.
73.9 Import and export shipments.
73.10 Inefficient containers.
73.11 Violations and accidents to be reported.

**Subpart A—Preparation of Articles for Transportation by Carriers by Rail Freight, Rail Express, Highway, or Water**

73.21 Prohibited packing.
73.22 Specification containers prescribed.
73.23 Closures for containers.
73.24 Design of containers.
73.25 Specification containers in outside containers.
73.26 Quantity limitations.
73.27 Rail express limitations.
73.28 Reused containers.
73.29 Empty containers.
73.30 Loading and placarding of cars by shippers and unloading of cars by consignees.
73.31 Qualification, maintenance, and use of tank cars.
73.32 Qualification, maintenance, and use of portable tanks.
73.33 Qualification, maintenance, and use of cargo tanks.
73.34 Qualification, maintenance, and use of cylinders.

**Subpart B—Explosives; Definitions and Preparation**

73.50 An explosive.
73.51 Forbidden explosives.
73.52 Acceptable explosives.

CLASS A EXPLOSIVES; DEFINITIONS

73.53 Definition of class A explosives.
73.54 Ammunition for cannon.
73.55 Ammunition, nonexplosive.
73.56 Ammunition, projectiles, grenades, bombs, mines, gas mines, and torpedoes.
73.57 Rocket ammunition.
73.58 Ammunition for small arms.
73.59 Chemical ammunition, explosive.
73.60 Black powder and low explosives.
73.61 High explosives.
73.62 High explosives, liquid.
73.63 High explosives with liquid explosive ingredient.
73.64 High explosives with no liquid explosive ingredient and propellant explosives, class A.
73.65 High explosives with no liquid explosive ingredient nor any chlorate.
73.66 Blasting caps, blasting caps with safety fuse, blasting caps with metal clad mild detonating fuse, and electric blasting caps.
73.67 Blasting caps with safety fuse and blasting caps with metal clad mild detonating fuse.
73.68 Detonating primers.
73.69 Detonating fuzes class A, with or without radioactive components, detonating fuse parts containing an explosive, boosters, bursters, or supplementary charges.
73.70 Diazodinitrophenol or lead mononitroresorcinate.
73.71 Fulminate of mercury.
73.72 Guanyl nitrosamino guanylidene hydrazine.
73.73 Lead azide.
73.74 Lead styphnate.
73.75 Nitro mannite.
73.76 Nitrosoguanidine.
73.77 Pentaerythrite tetranitrate.
73.78 Tetrazene.
73.79 Jet thrust units (jato), explosive, class A or igniters jet thrust (jato), explosive, class A.
73.80 Charged oil well jet perforating guns.
73.86 Samples of explosives and explosive articles.
73.87 Explosives in mixed packing.

CLASS B EXPLOSIVES; DEFINITIONS

73.88 Definition of class B explosives.
73.89 Ammunition for cannon with empty projectiles, inert-loaded projectiles, solid projectiles, or without projectiles or shell.
73.90 Rocket ammunition with empty projectiles, inert-loaded or solid projectiles, or without projectiles.
73.91 Special fireworks.
73.92 Jet thrust units (jato), class B or igniters, jet thrust (jato), class B, or starter cartridges, jet engine, class B.
73.93 Propellant explosives (solid) for cannon, small arms, rockets, guided missiles, or other devices, and propellant explosives (liquid).
73.94 Explosive power devices, class B.

CLASS C EXPLOSIVES; DEFINITIONS

73.100 Definition of class C explosives.
73.101 Small-arms ammunition.
73.102 Explosive cable cutters, explosive power devices, class C, explosive release devices, or starter cartridges, jet engine, class C.
73.103 Blasting caps, blasting caps with safety fuse, blasting caps with metal clad mild detonating fuse, and electric blasting caps, not exceeding 1,000 caps.
73.104 Cordeau detonant fuse, mild detonating fuse, metal clad or flexible linear shaped charges, metal clad.
73.105 Percussion, tracer, combination, time fuzes and tracers.
73.106 Cartridge bags, empty, with black powder igniters, igniters, safety squibs, electric squibs, delay electric igniters, igniter fuse-metal clad, and fuse lighters or fuse igniters.
73.107 Primers, percussion caps, and empty grenades, primed.
73.108 Common fireworks, signal flares, hand signal devices, railway or highway fusees, smoke signals, smoke candles, smoke grenades, smoke pots, and Very signal cartridges.
73.109 Toy caps.
73.110 Charged oil well jet perforating guns, total explosive content in guns not exceeding 20 pounds per motor vehicle.
73.111 Cigarette loads, explosive auto alarms, toy propellant devices, toy smoke devices, trick matches, and trick noise makers, explosive.
73.112 Oil well cartridges.
73.113 Detonating fuzes, class C explosives.
73.114 Actuating cartridges, explosive, fire extinguisher or valve.

**Subpart C—Flammable Liquids; Definition and Preparation**

73.115 Flammable liquids; definition.
73.116 Outage.
73.117 Closing and cushioning.
73.118 Exemptions for flammable liquids.
73.119 Flammable liquids not specifically provided for.
73.120 Automobiles, motorcycles, tractors, or other self-propelled vehicles.
73.121 Carbon bisulfide (disulfide).
73.123 Acrolein, inhibited.
73.123 Ethyl chloride.
73.124 Ethylene oxide.
73.125 Alcohol.
73.126 Nickel carbonyl.
73.127 Nitrocellulose or collodion cotton, fibrous, or nitrostarch, wet; nitrocellulose flakes, colloided nitrocellulose, granular, flake, or block, and lacquer base or lacquer chips, wet.
73.128 Paints and related materials.
73.129 Polishes, metal, stove, furniture and wood, liquid.
73.130 Refrigerating machines.
73.131 Road asphalt, or tar, liquid.
73.132 Cement, liquid, n.o.s. container cement, linoleum cement, pyroxylin cement, rubber cement, tile cement, wallboard cement and coating solution.
73.133 Spirits of nitroglycerin.
73.134 Aluminum triethyl, aluminum trimethyl, pyroforic fuel, pyroforic solutions, zinc ethyl, and triisobutyl aluminum, ethyl aluminum sesquichloride, diethyl aluminum chloride, ethyl aluminum dichloride, methyl aluminum sesquichloride, methyl aluminum sesquibromide, methyl magnesium bromide in ethyl ether in concentrations not over 40 percent, and mixtures or solutions thereof.
73.135 Dimethyl dichlorosilane, ethyl dichlorosilane, ethyl trichlorosilane, methyl trichlorosilane, trimethyl chlorosilane, and vinyl trichlorosilane.
73.136 Methyl dichlorosilane and trichlorosilane.
73.137 Lithium aluminum hydride, ethereal.
73.138 Pentaborane.
73.139 Ethylene imine, inhibited, and propylene imine, inhibited.
73.140 Zirconium, metallic, solutions, or mixtures thereof, liquid.
73.141 Amyl mercaptan, butyl mercaptan, ethyl mercaptan, isopropyl mercaptan, propyl mercaptan, and aliphatic mercaptan mixtures.
73.143 Methylchloromethyl ether, anhydrous.
73.144 Inks.
73.145 Dimethylhydrazine, unsymmetrical, and methylhydrazine.
73.146 Heaters for refrigerator cars, liquid fuel type.
73.147 Methyl vinyl ketone, inhibited.
73.148 Monoethylamine.

**Subpart D—Flammable Solids and Oxidizing Materials; Definition and Preparation**

73.150 Flammable solid; definition.
73.151 Oxidizing material; definition.
73.152 Packing.
73.153 Exemptions for flammable solids and oxidizing materials.
73.154 Flammable solids and oxidizing materials not specifically provided for.
73.155 Bags, nitrate of soda, empty and unwashed.
73.156 Barium peroxide and calcium peroxide.
73.157 Benzoyl peroxide, chlorobenzoyl peroxide (para), cyclohexanone peroxide, dimethylhexane dihydroperoxide, lauroyl peroxide, or succinic acid peroxide, wet.
73.158 Benzoyl peroxide, dry, chlorobenzoyl peroxide (para), dry, cyclohexanone peroxide, dry, dimethylhexane dihydroperoxide, dry, lauroyl peroxide, dry, or succinic acid peroxide, dry.
73.159 Burnt cotton.
73.160 Calcium chlorite and sodium chlorite.
73.161 Calcium phosphide.
73.162 Charcoal.
73.163 Chlorate of soda, chlorate of potash, and other chlorates.
73.164 Chromic acid.
73.165 Coal, ground bituminous, sea coal, coal facings.

Sec.
73.166 Cobalt resinate, precipitated, calcium resinate, and calcium resinate fused.
73.167 Cotton waste, oily.
73.168 Lithium amide, powdered.
73.169 Fiber, burnt.
73.170 Fibers or fabrics impregnated, saturated or coated.
73.171 Fish scrap or fish meal.
73.172 Hair, wet.
73.173 Aluminum dross or magnesium dross.
73.174 Iron sponge, spent oxide, spent iron mass, or spent iron sponge.
73.175 Lacquer base, or lacquer chips, dry.
73.176 Matches.
73.177 Motion-picture film and X-ray film.
73.178 Motion-picture film; old and worn out (not scrap).
73.179 Motion-picture film, toy.
73.180 Motion-picture film, and X-ray film, unexposed.
73.181 Motion-picture film; exemptions.
73.182 Nitrates.
73.183 Potassium nitrate mixed (fused) with sodium nitrite.
73.184 Nitrocellulose or collodion cotton, wet, or nitrocellulose, colloided, granular, or flake, wet, or nitrostarch, wet, or nitroguanidine, wet.
73.185 Paper stock, wet.
73.186 Paper waste, wet.
73.187 Peroxide of sodium.
73.188 Phosphoric anhydride.
73.189 Phosphorus, amorphous, red.
73.190 Phosphorus, white or yellow.
73.191 Phosphorus pentachloride.
73.192 Picrate of ammonia (ammonium picrate), picric acid, trinitrobenzoic acid, and urea nitrate wet.
73.193 Picric acid, trinitrobenzoic acid, or urea nitrate, wet.
73.194 Potassium permanganate.
73.195 Pyroxylin plastic scrap, photographic film scrap, X-ray film scrap, motion-picture film scrap, or pieces of exposed or unexposed film.
73.196 Pyroxylin plastic scrap, photographic film scrap, X-ray film scrap, motion-picture film scrap, or pieces of exposed or unexposed film, shipments by rail express.
73.197 Pyroxylin plastics, in sheets, rolls, rods, or tubes.
73.197a Smokeless powder for small arms.
73.198 Sodium hydride.
73.199 Rags, oily.
73.200 Rags, wet.
73.201 Rubber scrap, rubber buffings, reclaimed rubber, or regenerated rubber.
73.202 Sodium and potassium, metallic liquid alloy.
73.203 Tetranitromethane.
73.204 Sodium hydrosulfite.
73.205 Sodium picramate, wet.
73.206 Sodium or potassium, metallic, sodium amide, sodium potassium alloys, sodium aluminum hydride, lithium metal, lithium silicon, lithium hydride, and lithium aluminum hydride.
73.207 Sulfide of sodium or sulfide of potassium, fused or concentrated, when ground.
73.208 Titanium metal powder, wet or dry.
73.209 Tankages, garbage, and tankage fertilizers.
73.210 Tankages, rough ammoniate.
73.211 Textile waste, wet.
73.212 Trinitrobenzene and trinitrotoluene, wet.
73.213 Wool waste, wet.
73.214 Hafnium metal or zirconium metal, wet, minimum 25 percent water by weight, mechanically produced, finer than 270 mesh particle size; hafnium metal or zirconium metal, dry, in an atmosphere of inert gas, mechanically produced, finer than 270 mesh particle size; hafnium metal or zirconium metal, wet, minimum 25 percent water by weight, chemically produced (See Note 1), finer than 20 mesh particle size; hafnium metal or zirconium metal, dry, in an atmosphere of inert gas, chemically produced (See Note 1), finer than 20 mesh particle size.
73.216 Zirconium picramate, wet.
73.217 Calcium hypochlorite compounds, dry, and lithium hypochlorite compounds, dry.
73.218 Isopropyl percarbonate, unstabilized.
73.219 Potassium perchlorate.
73.220 Magnesium or zirconium scrap consisting of borings, clippings, shavings, sheets, turnings, or scalpings, and magnesium metallic (other than scrap), powdered pellets, turnings, or ribbon.
73.221 Liquid organic peroxides, n. o. s. and liquid organic peroxide solutions, n. o. s. other than acetyl peroxide solution, acetyl benzoyl peroxide solution, cumene hydroperoxide, dicumyl peroxide, hydrogen peroxide, peracetic acid, and tertiary butylisopropyl benzene hydroperoxide.
73.222 Acetyl peroxide and acetyl benzoyl peroxide, solution.
73.223 Peracetic acid.
73.224 Cumene hydroperoxide, dicumyl peroxide, diisopropylbenzene hydroperoxide, paramenthane hydroperoxide, and tertiary butylisopropyl benzene hydroperoxide.
73.225 Phosphorus sesquisulfide.
73.226 Thorium metal, powdered.
73.227 Urea peroxide.
73.228 Zinc ammonium nitrite.
73.229 Chlorate and borate mixtures or chlorate and magnesium chloride mixutres.
73.230 Sodium, metallic, dispersion in organic solvent.
73.231 Calcium, metallic, crystalline.
73.232 Tank cars containing residual phosphorus.
73.233 Nickel catalyst, finely divided, activated or spent.
73.234 Sodium nitrate and sodium nitrate mixtures.
73.235 Ammonium bichromate (ammonium dichromate).
73.236 Decaborane.
73.237 Chlorine dioxide hydrate, frosen.
73.238 Aircraft rocket engines (commercial) and/or aircraft rocket engine igniters (commercial).
73.239 Barium azide—50 percent or more water wet.

Subpart E—Acids and Other Corrosive Liquids; Definition and Preparation

73.240 Acids and other corrosive liquids; definition.
73.241 Outage.
73.242 Bottles containing acid or other corrosive liquids.
73.243 Closing and cushioning.
73.244 Exemptions for acids and other corrosive liquids.
73.245 Acids or other corrosive liquids not specifically provided for.
73.246 Antimony pentafluoride.
73.247 Acetyl chloride, antimony pentachloride, benzoyl chloride, benzyl chloride, chromyl chloride, pyro sulfuryl chloride, silicon chloride, sulfur chloride (mono and di), sulfuryl chloride, thionyl chloride, tin tetrachloride (anhydrous), and titanium tetrachloride.
73.248 Acid sludge, sludge acid, spent sulfuric acid, or spent mixed acid.
73.249 Alkaline corrosive liquids, n. o. s., alkaline caustic liquids, n. o. s., alkaline corrosive battery fluids, and sodium aluminate, liquid.
73.250 Automobiles or other self-propelled vehicles, engines or other mechanical apparatus.
73.251 Boron trichloride.
73.252 Bromine.
73.253 Chloracetyl chloride.
73.254 Chlorosulfonic acid and mixtures of chlorosulfonic acid-sulfur trioxide.
73.255 Dimethyl sulfate.
73.256 Compounds, cleaning, liquid.
73.257 Electrolyte (acid) or corrosive battery fluid.
73.258 Electrolyte, acid, or alkaline corrosive battery fluid, packed with storage batteries.
73.259 Electrolyte, acid, or alkaline, corrosive battery fluid, packed with battery charger, radio current supply device, or electronic equipment and actuating devices.
73.260 Electric storage batteries, wet.
73.261 Fire-extinguisher charges.
73.262 Hydrobromic acid.
73.263 Hydrochloric (muriatic) acid, hydrochloric (muriatic) acid mixtures, hydrochloric (muriatic) acid solution, inhibited, sodium chlorite solution, and cleaning compounds, liquid, containing hydrochloric (muriatic) acid.
73.264 Hydrofluoric acid.
73.265 Hydrofluosilicic acid.
73.266 Hydrogen peroxide solution in water.
73.267 Mixed acid (nitric and sulfuric acid) (nitrating acid).
73.268 Nitric acid.
73.269 Perchloric acid.
73.270 Phosphorus tribromide.
73.271 Phosphorus oxybromide, phosphorus oxychloride, phosphorus trichloride, and thiophosphoryl chloride.
73.272 Sulfuric acid.
73.273 Sulfur trioxide, stabilized.
70.274 Fluosulfonic acid.
73.275 Difluorophosphoric acid, anhydrous, monofluorophosphoric acid, anhydrous, hexafluorophosphoric acid, and mixtures thereof.
73.276 Anhydrous hydrazine and hydrazine solution.
73.277 Hypochlorite solutions.
73.278 Nitrohydrochloric acid.
73.279 Anisoyl chloride.
73.280 Allyl trichlorosilane, amyl trichlorosilane, butyl trichlorosilane, cyclohexenyl trichlorosilane, cyclohexyl trichlorosilane, diethyl dichlorosilane, diphenyl dichlorosilane, dodecyl trichlorosilane, ethyl phenyl dichlorosilane, hexadecyl trichlorosilane, hexyl trichlorosilane, nonyl trichlorosilane, octadecyl trichlorosilane, octyl trichlorosilane, phenyl trichlorosilane, and propyl trichlorosilane.
73.281 Benzyl bromide (bromotoluene, alpha).
73.282 Isopropyl percarbonate, stabilized.
73.283 Bromine trifluoride.
73.284 Bromine pentafluoride.
73.285 Chlorine trifluoride.
73.286 Chemical kits.
73.287 Chromic acid solution.
73.288 Allyl chloroformate, benzyl chloroformate, ethyl chloroformate, and methyl chloroformate.
73.289 Formic acid and formic acid solutions.
73.290 Mixtures of hydrofluoric and sulfuric acid.
73.291 Flame retardant compound, liquid.
73.292 Hexamethylene diamine solution.
73.293 Iodine monochloride.
73.294 Monochloroacetic acid, liquid.
73.295 Benzyl chloride.
73.296 Di iso octyl acid phosphate.

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73.297 Titanium sulfate solution containing not more than 45% sulfuric acid.
73.298 Memtetrahydro phthalic anhydride.
73.299 Etching acid liquid, n.o.s.
73.299a Tris-(1-aziridinyl) phosphine oxide.

Subpart F—Compressed Gases; Definition and Preparation

73.300 Definitions.
73.301 General requirements for shipment of compressed gases in cylinders.
73.302 Charging of cylinders with nonliquefied compressed gases.
73.303 Charging of cylinders with compressed gas in solution (acetylene).
73.304 Charging of cylinders with liquefied compressed gas.
73.305 Charging of cylinders with a mixture of compressed gas and other material.
73.306 Exemption from compliance with regulations for shipping compressed gas.
73.314 Requirements for compressed gases in tank cars.
73.315 Compressed gases in cargo tanks and portable tank containers.
73.316 Liquefied hydrogen.

Subpart G—Poisonous Articles; Definition and Preparation

73.325 Classes of poisonous articles.
73.326 Extremely dangerous poisons, class A, poison gas label; definition.
73.327 Packing.
73.328 Poisonous gases and liquids not specifically provided for.
73.329 Bromacetone; chlorpicrin and methyl chloride mixtures; chlorpicrin and nonflammable, nonliquefied compressed gas mixtures.
73.330 Chemical ammunition.
73.331 Gas identification sets.
73.332 Hydrocyanic acid, liquid (prussic acid) and hydrocyanic acid liquefied.
73.333 Phosgene or diphosgene.
73.334 Hexaethyl tetraphosphate, parathion, tetraethyl dithio pyrophosphate, tetraethyl pyrophosphate, or other class B poison organic phosphate mixtures, n.o.s., mixed with compressed gas.
73.335 Police grenades.
73.336 Nitrogen dioxide, liquid, nitrogen peroxide, liquid, and nitrogen tetroxide, liquid.
73.337 Nitric oxide.
73.338 Nitrogen tetroxide-nitric oxide mixtures containing up to 33.2 percent weight nitric oxide.
73.343 Less dangerous poisons, class B, liquid or solid, poison label; definition.
73.344 Packing for class B poisons, liquid.
73.345 Exemptions for poisonous liquids, class B.
73.346 Poisonous liquids not specifically provided for.
73.347 Aniline oil.
73.348 Arsenic acid.
73.349 Carbolic acid (phenol) liquid.
73.350 Chemical ammunition.
73.351 Hydrocyanic acid solutions.
73.352 Liquid sodium or potassium cyanide.
73.353 Methyl bromide, liquid (bromomethane), mixtures of methyl bromide and ethylene dibromide, liquid, mixtures of methyl bromide and chlorpicrin, liquid, or methyl bromide and nonflammable, nonliquefied compressed gas mixtures, liquid.
73.354 Motor fuel antiknock compound or tetraethyl lead.
73.355 Phenyldichlorarsine.
73.356 Thiophosgene.
73.357 Chlorpicrin and chlorpicrin mixtures containing no compressed gas or poisonous liquid, class A.
73.358 Hexaethyl tetraphosphate methyl parathion, organic phosphate compound, n.o.s., parathion, tetraethyl dithio pyrophosphate, and tetraethyl pyrophosphate, liquid.
73.359 Hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphate compound mixtures, n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures, liquid.
73.360 Perchloro-methyl-mercaptan.
73.361 Aldrin mixtures, liquid, with more than 60 percent aldrin.
73.362 4-Chloro-o-toluidine hydrochloride.
73.362a Dinitrophenol solutions.
73.363 Packing for class B poisons, solid.
73.364 Exemptions for poisonous solids, class B.
73.365 Poisonous solids not specifically provided for.
73.366 Arsenic (arsenic trioxide) or arsenic acid (solid).
73.367 Arsenical compounds, n.o.s., arsenate of lead, calcium arsenate, Paris green, and arsenical mixtures.
73.368 Arsenical dust, arsenical flue dust, and other poisonous noncombustible by-products dusts, also arsenic trioxide, calcium arsenate, and sodium arsenate.
73.369 Carbolic acid (phenol), not liquid.
73.370 Cyanides, or cyanide mixtures, except cyanide of calcium and mixtures thereof.
73.371 Dinitrobenzol.
73.372 Mercury bichloride (mercuric chloride).
73.373 Ortho-nitroaniline and paranitraniline.
73.374 Nitrochlorbenzene, meta or para.
73.375 Sodium azide.
73.376 Aldrin mixtures, dry, with more than 65 percent aldrin.
73.377 Hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphate compound mixtures n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures, dry.
73.378 Beryllium metal powder.
73.379 Cyanogen bromide.
73.381 Tear gas or irritating substances, class C, Tear Gas Label, definition.
73.382 Tear gas or irritating substances, class C, not specifically provided for.
73.383 Chemical ammunition.
73.384 Monochloracetone, stabilized.
73.385 Tear gas grenades, tear gas candles, or similar devices.
73.391 Radioactive materials, class D Poison, definition.
73.392 Exemptions for radioactive materials.
73.393 Packing and shielding.
73.394 Radioactive materials labels.
73.395 Cleaning cars and vehicles.
73.396 Radioactive materials, handling.

Subpart H—Marking and Labeling Explosives and Other Dangerous Articles

73.400 Explosives.
73.401 Dangerous articles.
73.402 Labeling dangerous articles.
73.403 Labels for mixed packing.
73.404 Labels.
73.405 Flammable liquids label.
73.406 Flammable solids and oxidizing materials label.
73.407 Acids, corrosive liquids, and alkaline caustic liquids labels.
73.408 Compressed gas labels.
73.409 Poisonous articles and tear gas labels.
73.410 Special fireworks label.
73.411 Explosives samples for laboratory examination label.
73.412 Explosives, class B, label for express shipment.
73.413 Empty container label.
73.414 Radioactive materials labels.

Subpart I—Shipping Instructions

73.425 "Order-Notify", "C. O. D.", and "Stop-off" shipments.
73.426 Cars containing lading which has been fumigated or treated with flammable liquids, flammable gases, poisonous liquids or solids, or poisonous gases.
73.427 Shipping order and bill of lading description.
73.428 Label or placard notation.
73.429 Receipts; rail express shipments.
73.430 Certificate.
73.431 Switching ticket.
73.432 Tank car shipments.

AUTHORITY: The provisions of this Part 73 issued under 62 Stat. 738, 74 Stat. 808; 18 U.S.C. 834.

[The regulations in Parts 71–78 of this chapter are applicable to every common and contract carrier by motor vehicle and every private carrier of property by motor vehicle subject to the regulatory provisions of Sections 831–835, 62 Stat. 738, 74 Stat. 808; 18 U.S.C. 831–835.

[Private carriers of property by motor vehicle subject to Parts 71–78 of this chapter are prohibited from transporting any explosive or other dangerous article unless the article is properly described by name in papers required by Parts 71–78 of this chapter to accompany every shipment of such article; and every such article must be packed and marked and in proper condition for transportation according to the regulations in Parts 71–78 of this chapter.]

NOTE 1: Because of the present emergency and until further order of the Commission, the following regulations shall apply to transportation of flammable liquids by private carriers of property in interstate or foreign commerce:

All regulations heretofore applying to common or contract carriers by motor vehicle shall apply to such private carriers, except:

Cargo tanks of tank motor vehicles constructed previous to June 15, 1943, may be continued in service if maintained in safe operating condition and sufficiently frequent inspections are maintained to determine compliance with all requirements as specified in this note.

Any defect or deficiency, due to accident or otherwise, that is likely to cause serious hazard must be corrected before any such tank is continued in or returned to service; see however, § 77.856 of this chapter.

Requirements applying to tests of tanks, and provisions for markers thereon except that indicating the flammable nature of the cargo, are waived.

Outages for shipments shall be those provided for by this part, except that filling of tanks to outage markers already incorporated in tanks, having due regard for safety in the transportation of the flammable liquids, need not be changed.

Section 77.815 of this chapter, labels, and § 77.819 of this chapter, certification of packages, of these regulations, need not be complied with by such private carriers, except as to packages transferred from one carrier to another.

## § 73.1 Purpose of the regulations in Parts 71–78 of this chapter.

(a) To promote the uniform enforcement of law and to minimize the dangers to life and property incident to the transportation of explosives and other dangerous articles by common carriers engaged

in interstate or foreign commerce, the regulations in Parts 71–78 of this chapter are prescribed to define these articles for transportation purposes, to state the precautions that must be observed by the shipper in preparing them for shipment by rail freight, rail express, rail baggage, highway, or by carrier by water. It is the duty of each such shipper to make the prescribed regulations effective and to thoroughly instruct employees in relation thereto.

(b) Explosives and other dangerous articles may be offered to carriers for transportation provided the articles are in proper condition for transportation, are as defined, and are packed, marked, labeled, described, certified, and otherwise as provided for in Parts 71–78 of this chapter for acceptable articles for transportation by rail freight, rail express, rail baggage, highway, or water. Articles must be loaded and stayed according to regulations in Parts 71–78 of this chapter applying to carriers by rail. Methods of manufacture, packing, and storage, insofar as they affect safety in transportation, must be open to inspection by a duly authorized representative of the initial carrier or of the Bureau of Explosives. Shipments that do not comply with the regulations in Parts 71–78 of this chapter must not be offered for transportation.

**§ 73.2 Classification; dangerous articles.**

(a) Dangerous articles other than explosives having more than one hazardous characteristic, as defined by the regulations in Parts 71–78 of this chapter must be classified according to the greatest hazard present, except those articles which are also poisons, class A or class D, which must be classified according to both dangerous characteristics as defined in this part.

**§ 73.3 Motor carrier regulations.**

(a) The packing required for shipments to be offered for transportation by motor carrier is as specified in this part.

**§ 73.4 Water carrier regulations.**

(a) The packing required for shipments to be offered to common carriers by water is as specified in this part.

**§ 73.5 Shipments by rail express.**

(a) The packing required for shipments to be forwarded by rail express will be, unless otherwise indicated, as prescribed for shipments by rail freight, provided the quantity limitations in one outside container, as shown in § 72.5 of this chapter, are observed.

**§ 73.6 Shipments as baggage by rail.**

(a) For shipments of explosives and other dangerous articles acceptable as baggage by rail carriers see Part 76 of this chapter, Regulations Applying to Rail Carriers in Baggage Service.

**§ 73.7 United States Government shipments.**

(a) Shipments of explosives or other dangerous articles offered by or consigned to the Departments of the Army, Navy, and Air Force of the United States Government, must be packed, including limitations of weight, in accordance with the regulations in this part or in containers of equal or greater strength and efficiency as required by their regulations.

(b) Shipments of radioactive materials, made by the Atomic Energy Commission, or under its direction or supervision, which are escorted by personnel specially designated by the Atomic Energy Commission, are exempt from the regulations in Parts 71–78 of this chapter.

**§ 73.8 Canadian shipments.**

(a) Explosives and other dangerous articles, as defined in Parts 71–78 of this chapter which are packed, marked, labeled, and loaded, in conformity with the regulations of the Board of Transport Commissioners for Canada, may be transported from point of entry in the United States to their destination in the United States or through the United States en route to a point in Canada.

NOTE 1: Because of the present emergency and until further order of the Commission, compressed gas cylinders 40 inches in length and 8 inches in diameter, charged with not more than 40 pounds of carbon dioxide or when charged with nitrogen not in excess of 2,000 pounds per square inch, and shipped by or to the Canadian Department of National Defense in accordance with Board of Transport Commissioners for Canada Order No. 76258 dated Mar. 10, 1951, may be shipped to destinations in the United States or through the United States to points in Canada.

(b) Specification containers made and maintained in full compliance with corresponding specifications prescribed by the Board of Transport Commissioners for Canada in its Regulations for the Transportation of Explosives and Other Dangerous Articles by Freight, and Specifications for Shipping Containers, and marked in accordance therewith, BTC, CRC, etc., may be used for shipment of explosives and other dangerous articles offered for transportation by carriers by rail freight, rail express, highway, or water.

**§ 73.9 Import and export shipments.**

(a) Import shipments of explosives and other dangerous articles offered in the United States in original packages for transportation by carriers by rail freight, rail express, motor vehicle, or water must comply with all requirements of the regulations in Parts 71–78 of this chapter. Except for shipments from Canada conforming with § 73.8, the importer must furnish with the order to the foreign shipper, and also to the forwarding agent at the port of entry, full and complete information as to the packing, marking, labeling, and other requirements, as prescribed in Parts 71–78 of this chapter, and the forwarding agent must file with the initial carrier in the United States a properly certified shipping order or other shipping papers as prescribed in this part. Except for the requirements of §§ 77.817 and 77.823 of this chapter, the provisions of Parts 71–78 of this chapter do not apply to such transportation by motor vehicle or water as may be necessary to effect transfer of import shipments from place of discharge to other places within the same port area or delivery to a water carrier within the same port area (including contiguous harbors). Further transportation of such import shipments by connecting water carrier shall be subject to the regulations prescribed by the Commandant of the Coast Guard.

(b) Shipments of explosives and other dangerous articles offered for transportation by common carrier by water from the United States, its insular possessions, or dependencies, destined to such insular possessions or territory, dependencies, or to a foreign country, must be packed, marked, labeled and described in accordance with the rules and regulations in force at destination ports or as prescribed in Parts 71–78 of this chapter.

(c) Outside shipping containers for export shipments offered for transportation by carriers subject to Parts 71–78 of this chapter may have specification markings prescribed for containers plainly and legibly shown on labels or tags securely fastened thereto in lieu of marking requirements as prescribed for containers by Part 78 of this chapter.

**§ 73.10 Inefficient containers.**

(a) The results of experience gained by examination of broken or leaking containers must be recorded by the Bureau of Explosives to the end that further use of any particular kind of container shown by experience to be inefficient, may be prohibited by the Commission.

**§ 73.11 Violations and accidents to be reported.**

(a) Consignees must report promptly to the Bureau of Explosives all instances of improper staying and broken, leaking, or defective containers of explosives or other dangerous articles in shipments received by them.

(b) The Bureau of Explosives, upon receipt of reports from consignees, should promptly report to the shipper full particulars covering all such cases.

## Subpart A—Preparation of Articles for Transportation by Carriers by Rail Freight, Rail Express, Highway, or Water

**§ 73.21 Prohibited packing.**

(a) The offering of packages of dangerous articles in outside packages containing in the same compartment interior packages, the mixture of contents of which would be liable to cause a dangerous evolution of heat or gas or produce corrosive materials, is prohibited for transportation by common, contract, and private carriers by rail freight, rail express, highway, or water, except as specified in §§ 73.152(a), 73.242 (a), (b) and 73.301(a).

(b) The offering for transportation of any package or container of any liquid, solid or gaseous material which under conditions incident to transportation may polymerize (combine or react with itself) or decompose so as to cause dangerous evolution of heat or gas is prohibited. Such materials may be offered for transportation when properly stabilized or inhibited. Refrigeration may be used as a means of stabilization only when approved by the Bureau of Explosives.

(c) The offering for transportation of any package or container of any material which will cause a dangerous evolution of heat or gas under conditions normally incident to transportation is forbidden.

(d) The offering for transportation of any package containing a cigarette lighter charged with fuel and equipped with an ignition element, or any similar heating, lighting, or ignition device, or any self-lighting cigarette, is forbidden unless the design and method of packaging insofar as they affect safety in transportation have been approved by the Bureau of Explosives.

### § 73.22 Specification containers prescribed.

(a) Shipping containers, unless otherwise provided in this part (see § 73.9 (c)), used hereafter in shipping explosives or other dangerous articles, must have been made, assembled with all parts or fittings in their proper place, and marked in compliance with specifications prescribed in Part 78 of this chapter or with specifications of the Commission in effect at date of manufacture of container.

(1) Because of the present emergency and until further order of the Commission, containers approved for emergency or experimental shipments may be authorized in the discretion of, and upon special permit to be issued by the Director or Acting Director, Bureau of Safety and Service, Washington, D. C.

(b) Containers that do not comply with the specifications must not be marked to indicate such compliance.

(c) Containers not specified in this part, made before the effective date of the regulations in Parts 71–78 of this chapter and authorized for use under the regulations effective October 1, 1930, which may be continued in use, are as follows:

| When these regulations call for specification numbers— | These specification containers may also be used— | |
|---|---|---|
| 1A | 1 | Boxed carboy, glass or earthenware. |
| 1B | 1 | Boxed carboy, lead. |
| 1C | 1 | Carboy in keg, glass or earthenware. |
| 3A | 3, 25, 26 | Cylinder. |
| 3AA | 3, 25, 26 | Do. |
| 3B | 26 | Do. |
| 3C | 7 | Do. |
| 3D | 33 | Do. |
| 3E | 3 | Do. |
| 4A | 26 | Do. |
| 4B | 26, 35 | Do. |
| 4BA | 26, 38 | Do. |
| 4C | 7 | Do. |
| 6B | 20A | Metal drum. |

(d) Where the regulations require spec. 22C or 15P wooden or plywood boxes or drums, spec. 1F or 1G, polyethylene carboys in wooden or plywood boxes or drums, respectively, may be continued in use for the commodities and gross weights for which they were previously authorized until further order of the Commission.

(e) Spec. 5G metal drums manufactured prior to May 12, 1954, may be continued in service until further order of the Commission.

(f) Where the regulations require spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter) metal drums, spec. 37D, 37E, 37F, 37G, and 37H metal drums manufactured prior to August 30, 1955, may be continued in use for commodities and gross weights for which they were previously authorized until further order of the Commission.

(g) Spec. 2S (§ 78.35 of this chapter) polyethylene drums manufactured prior to July 19, 1959 may be continued in service provided they are in satisfactory condition for service or until further order of the Commission.

(h) Aluminum drums complying with Spec. 42G, manufactured prior to February 28, 1960, may be continued in service, provided they are plainly marked ICC–42G, are embossed with maker's name or symbol, gauge of metal, capacity, year of manufacture, and are capable of withstanding the leakage test prescribed by § 78.111–11 of this chapter.

(i) Where the regulations require spec. 21C (§ 78.224 of this chapter) fiber drums, spec. 21A or 21B fiber drums manufactured prior to June 27, 1962, may be used for commodities and gross weights for which they were previously authorized until further order of the Commission.

(j) Specs. 42B and 42D (§§ 78.107 and 78.109 of this chapter) aluminum drums having rolling hoops attached to drums by tack-welding and manufactured prior to February 28, 1960, may be continued in service until further order of the Commission.

(k) Where the regulations require spec. 6D or 37M (§ 78.102 or 78.134 of this chapter) cylindrical steel overpacks, spec. 5B, 6J or 37A (single-trip container) (§ 78.82, 78.100 or 78.131 of this chapter) metal drums manufactured prior to March 18, 1964, having inside spec. 2S, 2SL, 2T or 2TL polyethylene container, may be continued in use for the commodities and gross weights for which they were previously authorized until further order of the Commission.

### § 73.23 Closures for containers.

(a) Outside containers must be closed for shipment as prescribed in the specifications for the container unless otherwise authorized for the particular article being shipped and in addition, closures of inside containers must be secured in a manner that will prevent leakage of contents under conditions of normal transportation. Gasketed closures must be fitted with gaskets of efficient material which will not be deteriorated by the contents of the container.

### § 73.24 Design of containers.

(a) In addition to standing the tests prescribed, the design and construction of inside and outside containers must be such as to prevent the occurrence in individual packages of defects that permit leakage of their contents under ordinary conditions incident to transportation.

(b) Articles for which detailed specifications for packing are not given in this part must be securely packed in containers strong enough to stand, without rupture or leakage of contents, all shocks ordinarily incident to handling during transit.

### § 73.25 Specification containers in outside containers.

(a) Outside specification shipping containers containing no acids or corrosive liquids may be shipped when tightly packed in strong outside fiberboard boxes or drums, wooden boxes, barrels or crates, metal barrels or drums, or other enclosures. The outside shipping container must be marked with the prescribed name of contents and labeled as required. Packages required by the regulations in this part to be marked "This Side Up" or "This End Up" must be packed in the outside package with their filling holes up, and the outside package must be marked "THIS SIDE UP" or "THIS END UP". The outside container must also be marked "INSIDE PACKAGES COMPLY WITH PRESCRIBED SPECIFICATIONS" unless the specification markings on the inside packages are visible through openings in the outside package.

(b) Outside specification shipping containers containing acids or other corrosive liquids, except nitric acid, perchloric acid, or hydrogen peroxide solution containing over 52 percent hydrogen peroxide by weight, may be shipped when tightly packed in strong outside fiberboard or wooden boxes, or in wooden crates, provided such outside container shall not contain any other article except under the following conditions:

(1) As provided in §§ 73.242, 73.257, 73.258, 73.259, 73.260, 73.261, and 73.286.

(2) Electrolyte acid or alkaline corrosive battery fluid in packages prescribed in §§ 73.257 and 73.258 may be included in outside shipping containers with dry charged storage batteries when packed to prevent movement within the outside containers.

(3) The outside container shall be marked with the prescribed name of contents and labeled as required and shall be marked "This Side Up" or "This End Up." The outside container must also be marked "Inside Packages Comply With Prescribed Specifications" unless the specification markings on the inside packages are visible through openings in the outside package.

### § 73.26 Quantity limitations.

(a) When quantity limitations are specified in Parts 71–78 of this chapter by United States liquid measure or by avoirdupois weight it is authorized that quantities measured by the metric system may be substituted, up to but not exceeding 1 gallon for liquids and 10 pounds for solids, on the basis of 1 liter per quart specified and 500 grams per pound specified.

(b) When quantity limitations do not appear in the packing requirements, the permitted gross weight or capacity authorized for a container to be offered for transportation by carrier by rail freight, rail express, highway, or water is shown in the container specification. (See also § 73.27.)

### § 73.27 Rail express limitations.

(a) Dangerous articles other than explosives, except such as are not accepted for transportation, and except where special packing is prescribed in this part

for rail express shipments, must, when offered for shipment by rail express, be packed, marked and labeled in compliance with this part.

(b) The maximum quantity of any explosive or other dangerous article that may be offered for transportation by rail express in one outside container must not exceed that as shown in § 72.5 of this chapter.

(c) When several dangerous articles are placed in one outside package without violating the regulations, the combined quantity of any one group must not exceed the lowest limit prescribed for any one of the articles of that group that is included.

**§ 73.28 Reused containers.**

(a) Containers used more than once (refilled and reshipped after having been previously emptied) must be in such condition, including closing devices and cushioning materials, that they will protect their contents during transit as efficiently as new containers. Repairs must be made in an efficient manner in accordance with requirements for materials and construction as prescribed in Part 78 of this chapter for new containers and parts that are weak, broken, or otherwise deteriorated must be replaced (see paragraphs (e), (f), (g), (h), and (i) of this section for containers that cannot be reused).

(1) Retest of carboy packages must have been made by or for shippers, or their authorized agents, as required by applicable provisions of the specifications in Part 78 of this chapter before carboys which are to be offered for transportation are filled.

Note 1: Tests not required by shipper who fills and ships or who reships filled carboys for one shipment only carboy packages which have been properly tested by another shipper or a duly authorized agency.

(b) Markings applied as prescribed by the specifications must be maintained in a legible condition.

(c) If, on account of painting or any other reason, the markings as prescribed for any container cannot be kept plain and legible, a metal plate, brazed or soldered, or otherwise securely fastened to the container, with a reproduction of the prescribed markings plainly stamped thereon, will be permitted.

(d) Containers previously used for the shipment of any explosive or other dangerous article must have the old markings, including name of contents, addresses, and labels, if any, thoroughly removed or obliterated before being used for the shipment of other articles.

(e) Boxes previously used for high explosives containing a liquid explosive ingredient not contained in an inside metal container must not be again used for shipments of any character.

(f) Boxes that have been contaminated by liquid explosive compositions must not again be used for shipments of any character.

(f) Kegs previously used for any chlorate must not be again used for shipments of any character.

(g) Metal kegs previously used for black powder not contained in an interior package must not be again used for shipment of any explosive.

Note 1: Because of the present emergency and until further order of the Commission, metal kegs, previously used for the shipment of black powder not contained in an interior package, may be used provided the kegs are in good physical condition and are not liable to permit escape of contents during transportation. Empty kegs previously used for shipment of black powder must be entirely free of black powder on the inside and outside before being offered for transportation.

(h) Single-trip containers made under specifications prescribed in Part 78 of this chapter, from which contents have once been removed following use for shipment of any article, must not be again used as shipping containers for explosives, flammable liquids, flammable solids, oxidizing materials, corrosive liquids, or poisons, class B, C, or D, as defined in this part: *Provided,* That during the present emergency and until further order of the Commission, single-trip containers may be reused if retested in accordance with methods approved by the Bureau of Explosives before each reuse and approved for service for specific commodities or classes of commodities. Applications for permission for reuse should be made to the Bureau of Explosives, 63 Vesey Street, New York 7, New York.

(i) Containers which are designated as nonreusable containers, marked NRC, and made under specifications prescribed in Part 78 of this chapter, from which contents have once been removed following use for shipment of any article, must not be again used as shipping containers for explosives, flammable liquids, flammable solids, oxidizing materials, corrosive liquids, or poisons, class B or C, as defined in this part.

(j) Cylinders or other containers which are designated as nonrefillable or for single-trip use under the specifications prescribed in Part 78 of this chapter, and from which contents have once been removed following use for the shipment of any article, must not be again used as shipping containers for compressed gases.

(k) Containers used for shipments of etching acid liquid, n.o.s. must not be reused for shipment of any commodity.

**§ 73.29 Empty containers.**

(a) Empty cylinders, barrels, kegs, drums, or other containers except carboys (see paragraph (c) of this section) previously used for the shipment of any explosive or other dangerous article, as defined in this part, if authorized for reuse must have all openings including removable heads, filling and vent holes, tightly closed before being offered for transportation. Small quantities of the material with which containers were loaded may remain in "empty" containers and when the vapors remaining therein are unstable, it is permissible to add sufficient inert gas to render the vapors stable.

(b) They may be loaded in open or stock cars when desired. Cars should not be placarded but lighted open-flame lanterns or other open-flame lights should be kept away.

(c) Carboys previously used for the shipment of corrosive liquids when offered to carriers for transportation as "empty" carboys, must have been thoroughly (completely) drained. Whenever practicable they should not be loaded with valuable or perishable freight.

(d) Empty bottles other than carboys previously used for the shipment of acids or other corrosive liquids must be securely stoppered.

(e) All containers and accessories which have been used for shipments of radioactive materials when shipped as empty must be sufficiently free of radioactive contamination so as to conform to the conditions of § 73.392 (a) (1), (2), and (3).

(f) Unless otherwise specifically provided, empty containers offered for transportation (see paragraph (a) of this section) if bearing labels described in §§ 73.405 through 73.414 (except § 73.413) of this chapter must have such labels removed, obliterated, or completely covered. The label described in § 73.413 is authorized for the latter purpose. Containers which last contained explosives on which the word "EXPLOSIVES" and/or commodity name is printed, stenciled or otherwise marked or applied, when shipped as empty shall have such marking completely covered or obliterated if shipped in less-than-carload or less-than-truckload lots, or in open-top or flat cars or open-top or flat bed motor vehicles or trailers. Covering or obliteration of such labels and markings shall not be required for carload or truckload shipments made in closed cars or van-type motor vehicles when loaded by the shipper and unloaded by the consignee or their authorized agents.

**§ 73.30 Loading and placarding of cars by shippers and unloading of cars by consignees.**

(a) When shipments of explosives or other dangerous articles are loaded into cars by shippers, or unloaded from cars by the consignee or his duly authorized agent, the applicable provisions of Part 74 of this chapter must be complied with. See § 74.538 of this chapter for loading and storage chart.

**§ 73.31 Qualification, maintenance, and use of tank cars.**

(a) *General qualifications for use.* (1) Except as otherwise provided in subparagraph (2) of this paragraph, every tank car used for the transportation of dangerous articles shall meet the requirements of the applicable specification and regulations for the transportation of the particular commodity. See subparagraph (3) of this paragraph.

(2) In addition to the tanks authorized in Part 73, tanks built prior to July 1, 1927, in compliance with the American Railway Association's Specifications for Tank Cars or tanks built in compliance with previous specifications of the Commission, if built or under construction on the effective dates thereof, are authorized for service as prescribed in the following table and notes, provided tanks and safety relief devices are retested as prescribed in paragraphs (c) and (d) of this section and equipped with approved valves, valve protection devices and safety relief devices.

| Specifications prescribed in current regulations | Other specifications permitted (subject to the notes) | Notes |
|---|---|---|
| 103 | ARA-II, ARA-III, ARA-IV. | 2, 3, 4 |
| 103A | ARA-II, ARA-III | 1, 2 |
| 103B or 103B-W | ARA-II and ARA-III rubber lined. | 2 |
| 104 | ARA-IV | 2, 4 |
| 105A200-W | 105A100-W | 5 |
| 105A200AL-W | 105A100AL-W | 5 |
| 105A300-W | ARA-V, ICC-105, 105-A301. | |
| 105A400-W | 105A400 | |
| 105A500-W | 105A500 | |
| 105A600-W | 105A600 | |
| 106A500-X | ICC-27, BE-27, 106A800 | |
| 106A800-X | 106A800 | |
| 107A**** | | 6 |

NOTE 1: ARA tanks must have been originally designed or subsequently reconstructed for the transportation of [illegible].

NOTE 2: Tank cars equipped with safety vents must have the vent closure so chained or otherwise fastened as to prevent misplacement.

NOTE 3: These cars must not be used for shipments of smokeless powder in water unless equipped with positive closure type bottom outlet valves.

NOTE 4: Until Jan. 1, 1965, on cars built prior to Jan. 1, 1959, 25 psi safety relief valves may be replaced with 35 psi safety relief valves not having an official rated capacity.

NOTE 5: Tanks built as Spec. ICC-105A100-W or 105A-100AL-W may be altered and reclassified as Spec. 105A-200-W or 105A200AL-W, respectively, by installing safety relief valves, retesting and stenciling in accordance with the applicable specification.

NOTE 6: The test pressures of tanks built in the United States prior to Jan. 1, 1956, may be increased to comply with current Spec. ICC-107A. Original and revised test pressure must be indicated and may be shown on a plate attached to the bulkhead of the car.

(3) Unless otherwise specifically provided, when class ICC-105A-W, 105A-AL-W, 106A, 109A-AL-W, 110A-W, 111A, 112A-W or 114A-W tank car tanks are prescribed, the same class tanks having higher marked test pressures than those prescribed may also be used.

(4) Tank cars and appurtenances may be used for the transportation of any commodity for which they are authorized. Tank cars proposed for a commodity service other than authorized, must be approved for such service by the Association of American Railroads Committee on Tank Cars. Transfer of a tank car from one authorized service to another may be made only by the owner or owner's authorization. Classes ICC-105A, 109A, 111A100-W-4, 112A or 114A tank cars may be used for any commodity for which they are approved by the Committee on Tank Cars when stenciled accordingly. When a tank car is stenciled to indicate that it is authorized for one commodity only, it must not be used for any other service.

NOTE 1: For additional requirements for tank cars for compressed gases, see § 73.314.

(b) *Loading and shipping*—(1) *Examination before shipping.* When tanks are loaded and prior to shipping, the shipper must determine to the extent practicable, that the tank, safety appurtenances and fittings are in proper condition for the safe transportation of the lading. Tanks with bottom discharge outlets must have their outlet caps off, or outlet cap plugs open, during the entire time tanks are being loaded. After loading, tanks with bottom outlet valves which permit more than a dropping of the liquid with the outlet caps off, or the outlet cap plugs open, must not be offered for transportation until proper repairs have been made. Tanks which show any dropping or leaking of liquid contents at seams or rivets, must not be offered for transportation until proper repairs have been made.

(2) *Loading requirements for tanks with interior heater coils.* Tank cars equipped with interior heater coils, except when coils are rendered inoperative by blocking off the inlet and outlet, must be loaded with heater coil inlet and outlet caps off during entire time tanks are being loaded and show no leakage with caps off.

(3) *Securing closures.* All closures of openings in tank cars and of their protective housings must be properly secured in place by the use of a bar, wrench, or other suitable tool. A wrench having a handle at least 36 inches long must be used to apply the outlet valve cap. Manway covers and outlet valve caps must be made tight against leakage of vapor and liquid, by use of gaskets of suitable materials, before cars are tendered to carrier for transportation. Luting materials must not be used in outlet cap or on threads of bottom outlet.

(4) *Inspection of safety relief devices on class ICC-106A and 110A tanks.* Safety relief devices of the frangible disc or fusible plug type used on tanks of classes ICC-106A or 110A must be inspected before each loaded trip of tank by removing at least one vent for visual inspection; if it shows signs of deterioration, all devices must be removed and inspected and those which do not meet the requirements must be renewed.

(c) *Periodic retest and reinspection of single-unit tank car tanks.* (1) Tanks, interior heater systems, and safety relief valves must be retested periodically as specified in Retest Table 1 of this paragraph. Retests may be made at any time during the calendar year the retest falls due except as provided in the notes. Periodic retest of exterior heater systems is not a specification requirement.

(2) Each tank must be retested by completely filling the tank and manway nozzle or expansion dome with water or other liquid of similar viscosity except as otherwise provided for in Note (d) to Retest Table 1 and applying the specified pressure for 10 minutes if the tank is not insulated, or 20 minutes if the tank is insulated. There shall be no leakage or evidence of distress. The tank insulation and jacket need not be removed unless leakage is indicated by a drop in pressure. The liquid temperature must not exceed 100° F. during the test. Calking of welded joints to stop leaks developed during retests is prohibited.

(3) Tanks in service 10 years or over must be internally inspected and interior heater systems inspected for defects which would make leakage or failure probable during transit.

(4) Anchor rivet housings, if used, must not be removed during retest. They shall be retested by applying an air pressure of 100 psi through openings in the tank shell and must show no leakage.

(5) Interior heater systems must be retested hydrostatically at 200 psi and must show no leakage.

(6) Safety relief valves must be retested with air or gas and must start to discharge at the pressure prescribed within plus or minus 3 percent except that if the start-to-discharge pressure is under 100 psi, the valve must start to discharge at the pressure prescribed within plus or minus 3 psi. Valves must be vapor tight at the prescribed pressure.

(7) All ICC tanks built to one specification and authorized to be stenciled to another specification must be retested in accordance with the higher specification and the test pressure stenciled accordingly on the tank or jacket.

(8) Retests of tanks and safety relief devices must be reported by party making tests to car owner. Reports must show initials and numbers of cars, pressure to which tested, date and place of test, and by whom tested. Reports of latest retest must be retained by owner until the next retest has been accomplished and recorded.

(9) After repairs requiring welding, riveting or calking of rivets, tanks must be retested as specified in Retest Table 1 of this paragraph before return to service. Glass, lead or rubber lined tanks must be retested before lining is renewed. Interior heater systems must be retested before return to service after repairs or renewals of any part of the system.

(10) The month and year of tests of tanks, safety relief valves, heater system and pressure to which tested must be stenciled on the tank or on jacket if insulated.

RETEST TABLE 1

| Specification | Retest interval—years[1] | | | | Retest pressure—psi | | |
|---|---|---|---|---|---|---|---|
| | Tank and interior heater systems | | | Safety relief valve | Tank | Safety relief valve | |
| | Up to 10 years | Over 10 to 22 years | Over 22 years | | | Start to discharge | Vapor tight |
| ICC-103 | 10 | 10 | 10 | 10 | 60 | •35 | 28 |
| 103AL | | 5 | 5 | 5 | 60 | 35 | 28 |
| 103-W | 10 | 10 | 10 | 10 | 60 | •35 | 28 |
| 103AL-W | 10 | 10 | 10 | 10 | 60 | 35 | 28 |
| 103A | •5 | 3 | 1 | 2 | 60 | 35 | 28 |
| 103A-W | •5 | 3 | 1 | 2 | 60 | 35 | 28 |
| 103A-AL-W | •5 | 3 | 1 | (•) | 60 | b35 | 28 |
| 103A-N-W | •5 | 3 | 1 | 2 | 60 | 35 | 28 |
| 103B | f5 | f3 | f1 | None | 60 | | |
| 103B-W | f5 | f3 | f1 | None | 60 | | |
| 103B100-W | f5 | f3 | f1 | (•) | 100 | 75 | 60 |
| 103C-AL | | 2 | 1 | (•) | 60 | 60 | |
| 103C-W | •5 | 3 | 1 | (•) | 60 | b35 | 28 |
| 103D-W | •5 | 3 | 1 | (•) | 60 | 35 | 28 |
| 103E-W | •5 | 3 | 1 | (•) | 60 | 35 | 28 |
| 104 | 10 | 10 | 10 | 10 | 60 | •35 | 28 |
| 104-W | 10 | 10 | 10 | 10 | 60 | •35 | 28 |
| 105 | | | •10 | •5 | 500 | •225 | 180 |

See footnotes at end of table.

RETEST TABLE 1—Continued

| Specification | Retest interval—years [1] | | | | Retest pressure—psi | | |
|---|---|---|---|---|---|---|---|
| | Tank and interior heater systems | | | Safety relief valve | Tank | Safety relief valve | |
| | Up to 10 years | Over 10 to 22 years | Over 22 years | | | Start to discharge | Vapor tight |
| ICC–105A100 | 10 | 10 | 10 | 5 | 100 | 75 | 60 |
| 105A100AL–W | 10 | 10 | 10 | 5 | 100 | 75 | 60 |
| 105A100–W | 10 | 10 | 10 | 5 | 100 | 75 | 60 |
| 105A200AL–W | 10 | 10 | 10 | 5 | 200 | 150 | 120 |
| 105A200–W | 10 | 10 | 10 | 5 | 200 | 150 | 120 |
| 105A300 | [a] 10 | [a] 10 | [a] 10 | [a] 5 | 300 | [c] 225 | 180 |
| 105A300AL–W | 10 | 10 | 10 | 5 | 300 | 225 | 180 |
| 105A300–W | [a f] 10 | [a f] 10 | [a f] 10 | [a k] 5 | 300 | [c m] 225 | [n] 180 |
| 105A400 | [a] 10 | [a] 10 | [a] 10 | [a] 5 | 400 | 300 | 240 |
| 105A400–W | [a] 10 | [a] 10 | [a] 10 | [a] 5 | 400 | [m] 300 | 240 |
| 105A500 | [a] 10 | [a] 10 | [a] 10 | [a] 5 | 500 | [b] 375 | 300 |
| 105A500–W | [a f] 10 | [a f] 10 | [a f] 10 | [a k] 5 | 500 | [b] 375 | 300 |
| 105A600 | [a] 10 | [a] 10 | [a] 10 | [a] 5 | 600 | 450 | 360 |
| 105A600–W | [a] 10 | [a] 10 | [a] 10 | [a] 5 | 600 | [m] 450 | 360 |
| 109A100AL–W | 10 | 10 | 10 | 5 | 100 | 75 | 60 |
| 109A200AL–W | 10 | 10 | 10 | 5 | 200 | 150 | 120 |
| 109A300AL–W | 10 | 10 | 10 | 5 | 300 | 225 | 180 |
| 109A300–W | 10 | 10 | 10 | 5 | 300 | 225 | 180 |
| 111A60AL–W | 10 | 10 | 10 | 10 | 60 | 35 | 28 |
| 111A60–F–1 | 10 | 10 | 10 | 10 | 60 | 35 | 28 |
| 111A60–W–1 | 10 | 10 | 10 | 10 | 60 | 35 | 28 |
| 111A100–F–1 | | 10 | 10 | 10 | 100 | 75 | 60 |
| 111A100–W–1 | 10 | 10 | 10 | 10 | 100 | 75 | 60 |
| 111A100–F–2 | 5 | 3 | 1 | 2 | 100 | 75 | 60 |
| 111A100–W–2 | 5 | 3 | 1 | 2 | 100 | 75 | 60 |
| 111A100–W–3 | 10 | 10 | 10 | 10 | 100 | 75 | 60 |
| 111A100–W–4 | 10 | 10 | 10 | 5 | 100 | 75 | 60 |
| 111A100–W–5 | [f] 5 | [f] 3 | [f] 1 | None | 100 | | |
| 111A100–W–6 | [d] 5 | 3 | 1 | (e) | 100 | 75 | 60 |
| 112A200–W | 10 | 10 | 10 | 5 | 200 | 150 | 120 |
| 112A340–W | 10 | 10 | 10 | 5 | 340 | [a] 255 | [a] 204 |
| 112A400–F | | 10 | 10 | 5 | 400 | 300 | 240 |
| 112A400–W | 10 | 10 | 10 | 5 | 400 | [a] 300 | [a] 240 |
| 112A500–W | [a] 10 | [a] 10 | [a] 10 | 5 | 500 | [b] 375 | 300 |
| 113A60–W–2 | (l) | (l) | (l) | (l) | (l) | (l) | (l) |
| 114A340–W | 10 | 10 | 10 | 5 | 340 | [a] 255 | [a] 204 |
| EMERG. USG–A, B & C | | 10 | 10 | 10 | 60 | 25 | |
| ARA–II | | | 10 | 10 | 60 | 25 | 20 |
| II acid (unlined) | | | 1 | None | 60 | | |
| II (rubber lined) | | | (f) | None | 60 | | |
| III | | | 10 | 10 | 60 | [a] 25 | 20 |
| III acid (unlined) | | | 1 | None | 60 | | |
| III (rubber lined) | | | (f) | None | 60 | | |
| IV | | | 10 | 10 | 60 | [a] 25 | 20 |
| IV–A | | | 10 | 5 | 100 | 35 | 28 |
| V | | | [a] 10 | [a] 5 | 300 | [c] 225 | 180 |

[a] Tanks and safety relief valves in chlorine service must be retested every 2 years at any time during the calendar month the retest falls due. See § 73.314(c) Note 12.

[b] Spec. 103C–W, and 103A–AL–W cars built prior to Aug. 31, 1956, equipped with safety relief valves set to start to discharge at 45 psi may be continued in service. Such valves may be set to start to discharge at 35 psi by installing a spring suitable for the lower pressure.

[c] See praragraph (a)(2) Note 4 or this section.

[d] A commodity for which a tank is approved may be used for filling tank and dome when retesting tanks in service not over 10 years.

[e] Safety relief valve retest period is same as tank retest period.

[f] Nickel clad tanks in bromine service and any glass, rubber, or lead lined tank need not be periodically retested, but the interior heater systems and safety relief valves must be retested at the prescribed interval. See also paragraph (c)(9) of this section.

[g] If safety relief valves are used in combination with breaking pins designed to break at 225 psi, the safety relief valves must be retested and must start to discharge at 213 psi plus or minus 3 percent.

[h] If safety relief valves are used in combination with breaking pins designed to break at 375 psi, the safety relief valves must be retested and must start to discharge at 360 psi plus or minus 3 percent.

[i] Tanks and safety relief devices in hydrocyanic acid service must be retested and inspected by a written procedure filed with and approved by the Bureau of Explosives.

[j] When the retest interval requirement changes due to the age of the tank, the new retest interval specified is effective from the last retest date.

[k] Safety relief valves in bromine service must be retested every 2 years.

[l] Tanks complying with this specification need not be periodically retested, but safety relief devices must be retested every 5 years.

[m] When a safety relief valve is used in combination with a breaking pin device, the breaking pin device shall be designed to fail at a pressure of 75 percent of the tank test pressure and safety relief valve shall be set for a start-to-discharge pressure of 71 percent of the tank test pressure.

[n] If the alternate safety relief valve start-to-discharge pressure setting is used, the start-to-discharge pressure of safety relief valves shall be in accordance with the provisions of § 73.102–11 of this chapter.

(d) *Periodic retest and reinspection of tanks other than single-unit tank car tanks.* (1) Tanks designed to be removed from cars for filling and emptying and tanks to spec. ICC–107A**** and their safety relief devices must be retested periodically as specified in Retest Table 2 of this paragraph. Retests may be made at any time during the calendar year the retest falls due.

(2) Each tank must be subjected to the specified hydrostatic pressure and its permanent expansion determined by an accurate method. Pressure must be maintained for 30 seconds and as much longer as may be necessary to secure complete expansion of the tank. Pressure gauge must permit reading to an accuracy of one percent. Expansion gauge must permit reading of total expansion to an accuracy of one percent. Expansion must be recorded in cubic centimeters. Permanent volumetric expansion must not exceed 10 percent of total volumetric expansion at test pressure and tank must not leak or show evidence of distress.

(3) Each tank, except tanks to spec. ICC–107A, must also be subjected to interior air pressure test of at least 100 psi under conditions favorable to detection of any leakage. No leaks shall appear.

(4) Safety relief valves must be retested by air or gas, must start to discharge at or below the prescribed pressure and must be vaportight at or above the prescribed pressure.

(5) Frangible discs or fusible plugs must be removed from the tank and visually inspected.

(6) Tanks must be retested as specified in Retest Table 2 of this paragraph before return to service after repairs involving welding or heat treatment.

(7) The month and year of test must be plainly and permanently stamped into the metal of one head or chime of each tank passing test; for example, 1–60 for January, 1960. On ICC–107A**** tanks, the date must be stamped into the metal of the marked end; except that if all tanks mounted on a car have been tested, the date may be stamped into the metal of a plate permanently applied to the bulkhead on the "A" end of the car. Date of previous tests and all prescribed markings must be kept legible.

(8) Retests of tanks and safety relief devices must be reported by party making tests to owner of tank. Reports must show registered identifying mark and serial number, pressure to which tested, date and place of test, and by whom tested. Reports of latest retest must be retained by owner until the next retest has been accomplished and recorded.

RETEST TABLE 2

| Specification | Retest interval—years | | Retest pressure—psi | | Safety relief valve pressure—psi | |
|---|---|---|---|---|---|---|
| | Tank | Safety relief devices | Tank hydrostatic expansion | Tank air test | Start-to-discharge | Vapor tight |
| ICC–27 | 5 | 2 | 500 | 100 | 375 | 300 |
| 106A500 | 5 | 2 | 500 | 100 | 375 | 300 |
| 106A500X | 5 | 2 | 500 | 100 | 375 | 300 |
| 106A800 | 5 | 2 | 800 | 100 | 600 | 480 |
| 106A800X | 5 | 2 | 800 | 100 | 600 | 480 |
| 106A800NCI | 5 | 2 | 800 | 100 | 600 | 480 |
| 107A**** | 5 | [a] 2 | [b] | None | None | None |
| 110A500–W | 5 | 2 | 500 | 100 | 375 | 300 |
| 110A800–W | 5 | 2 | 800 | 100 | 600 | 480 |
| BE–27 | 5 | 2 | 500 | 100 | 375 | 300 |

[a] If ICC–107A**** tanks are used for transportation of flammable gases, one frangible disc from each car must be burst at the interval prescribed. The sample disc must burst at a pressure not exceeding the marked test pressure of the tank and not less than 7/8 of the marked test pressure. If the sample disc does not burst within the prescribed limits, all discs on the car must be replaced.

[b] The hydrostatic expansion test pressure must at least equal the marked test pressure.

(e) *Tank car tanks subjected to the action of fire.* (1) Tank car tanks of other than classes ICC–106A, 107A or 110A bearing evidence of damage to the metal by fire must be withdrawn from transportation service except that if the damage to the tank is local only or confined to not more than 25 percent of the tank surface, the damaged material may be replaced. See paragraph (f) (1) of this section for the procedure for handling tank car tanks with more than 25 percent of the tank surface damaged.

(2) Tank car tanks of classes ICC–106A, 107A or 110A bearing evidence of damage to the metal by fire must be withdrawn from transportation service until they have been inspected inside and outside to determine that no reduction in wall thickness has resulted, and have been heat-treated and retested. These operations must be carried out, supervised and reported as prescribed by the specifications for original heat treatment and test.

(f) *Repairs or alterations.* (1) For procedure to be followed in making repairs or alterations to all tank car tanks and securing approval therefor, see Appendix R, Association of American Railroads Specifications for Tank Cars.

(2) After alterations of tank cars or equipment therefor from original design, a certificate of compliance with the respective specification must be furnished to the car owner, to the Bureau of Explosives, and to the Secretary, Mechanical Division, Association of American Railroads.

**§ 73.32 Qualification, maintenance, and use of portable tanks.**

(a) Except as otherwise provided in this section, every portable tank container used for the transportation of dangerous articles shall fulfill the requirements of the specification and regulations for the transportation of the particular commodity. A manufacturer's data report of the portable tank container shall be procured and retained in the files of the owner during the time that such portable tank container is used for such service.

(1) When a portable tank container is used as a cargo tank container, it shall comply with all the requirements prescribed for cargo tank containers. (See § 73.33.)

(2) Portable tank containers for transportation as cargo on vessels in commerce subject to the jurisdiction of the United States Coast Guard shall not exceed a loaded weight of 20,000 pounds. Nothing contained in this section shall be so construed as to pertain to transportation on car floats and car ferries, nor shall such limitation in weight apply to trailerships or containerships if approved under Coast Guard Regulations.

(b) Any portable tank container constructed prior to May 15, 1950, complying with the requirements of either the A. S. M. E. Code for Unfired Pressure Vessels, 1946 Edition, or the A. P. I.–A. S. M. E. Code for Unfired Pressure Vessels, 1943 Edition, may be used for the transportation of liquefied compressed gas, provided it fulfills all the requirements of this part and specifications for the particular gas or gases to be transported therein and shall be marked "ICC Specification 51X" on the plate required by the specification, except as modified by any or all of the following:

(1) Tanks designed and constructed in accordance with Pars. U–68, U–69, or U–201 of the A. S. M. E. Code may be used. Tanks designed and constructed in accordance with Pars. U–68 or U–69 may be re-rated at a working pressure 25 percent in excess of the design pressure for which the tank was originally constructed. If advantage is taken of the increased rating, the re-rated pressure shall be marked on the plate as follows:

Re-rated working pressure ... psig.

NOTE 1: For purposes of setting safety relief valves, pressure control valves and establishing retest pressure, and for purposes of establishing maximum and minimum design pressures, the re-rated working pressure shall be considered as the equivalent of the design pressure as defined in the specification.

(2) Loading and unloading accessories, valves, piping, fittings, safety and gauging devices, do not have to comply with the requirements for the particular location on the tank.

(3) Tanks having capacities of between 750 pounds and 1,000 pounds of water shall be considered as portable tank containers for the purposes of this part. In lieu of using safety relief valves on such containers they may be equipped with fusible plugs only when the container is filled by weight. Size, number, and location, as well as character and physical properties of fusible plugs shall be approved by the Bureau of Explosives. These containers shall be marked "ICC Specification 51S".

(4) Specification requirements as to stress-relieving and radiographing are waived.

(c) Any portable tank container of ICC Specification 50[1] fulfilling the requirements of that specification may be continued in service for transportation of a liquefied petroleum gas if it is retested every five years in accordance with the requirements of paragraph (e) (3), (4), and (5) of this section: *Provided,* That it is in and can be maintained in safe operating condition for the transportation of that gas. In this case the container may retain its original markings.

(d) Fusion welded portable tanks manufactured prior to July 19, 1948 in complete compliance with specifications included in ICC Authority No. 3666 dated December 28, 1939 (235 I. C. C. 595),[1] are authorized for the transportation of commercial butane: *Provided,* That they are in and can be maintained in safe operating condition for the transportation of that gas and are retested every five years in accordance with the requirements of paragraph (e) (3), (4), and (5) of this section. Certificate of manufacture for each tank and record of each required five year retest is filed with the Bureau of Explosives, and in addition to the markings prescribed by the aforementioned authority each tank is permanently marked "ICC–50X." (See Appendix A to Subpart C of Part 78 of this chapter.)

[1] Use of existing portable tanks authorized, but new construction not authorized.

(e) Portable tank containers used for the transportation of dangerous articles shall be retested in accordance with the following and shall not be kept in or returned to transportation service unless they shall have successfully withstood the following prescribed tests, as appropriate in each instance:

(1) Every portable tank container manufactured in accordance with ICC Specification 60 (§ 78.255 of this chapter) shall be tested at the end of the first 4 year period after the original test and each 2 years thereafter up to 12 years of service and annually thereafter. Except that retests are not required on such tanks equipped with rubber lining but retests must be made before such tanks are relined. Retest of Specification 60 tanks (see § 78.255 of this chapter) to be as required in § 78.255–12 of Specification 60 (§ 78.255 of this chapter) for new tank.

(2) Every portable tank container which is constructed in accordance with ICC Specification 51 (§ 78.245 of this chapter), or qualified for transporting compressed gases as prescribed in these regulations shall be tested at least once in every five years in accordance with paragraph (e) (3), (4), and (5) of this section. A written record indicating the dates and results of all required pressure tests shall be retained by the owner or his authorized agent until the next retest has been accomplished and recorded.

(3) The tank less any fittings shall be subject to a hydrostatic pressure of one and one-half times the design pressure (maximum allowable working pressure or re-rated pressure) of the tank.

(4) While under test pressure the tank shall be inspected for leakage, corroded areas, bad dents or other conditions which indicate weakness that might render the tank unsafe for transportation service and shall be rejected if evidence of any such unsafe condition is discovered.

(5) The tank lagging, if any, and its jacket need not be removed from lagged tanks unless it is found to be impossible to reach test pressure and maintain a condition of pressure equilibrium after test pressure is reached during tank retesting.

(f) Every tank not complying in all respects with the prescribed specifications, but otherwise allowable under this part, shall successfully withstand the identical tests at test periods required for "specification tanks" by paragraph (e) (3), (4), and (5) of this section. Tanks constructed in accordance with paragraph U–68 or U–69 of the A. S. M. E. Code, and which have not been rerated, must be retested at a hydrostatic pressure of twice the design pressure.

(g) Without regard to any other retest requirement, any tank that shows evidence at any time of bad dents, corroded areas, leakage or other conditions that indicate weakness which might render the tank unsafe for transportation service, shall be retested as prescribed by the requirements of paragraph (e) (3), (4), and (5) of this section.

(h) Any tank which has been in an accident and which has been damaged to an extent likely to cause it to be in unsafe condition or to an extent where such a condition is suspected shall be

tested as prescribed by the requirements of paragraph (e) (3), (4), and (5) of this section.

(i) Any tank which has been out of transportation service for a period of one year or more shall not be returned to or placed in such service until it shall have successfully fulfilled the testing requirements prescribed in paragraph (e) (3), (4), and (5) of this section.

(j) The Commission may require the testing under prescribed conditions of any tank when probable cause appears for suspecting that such tank is in unsafe operating condition.

(k) The repair of tanks is authorized, provided such repairs are made under requirements prescribed in the "Code" for the original design and construction.

(l) In addition to any other provisions of the specification, no tank shall be repaired, or remodeled, as to cause leakage or cracks or likelihood of leakage or cracks, by areas of stress concentration due to shrinkage of cooling metal in welding operations, sharp fillets, reversal of stresses, or otherwise.

(2) No field welding shall be done except to non-pressure parts.

(l) The bursting strength of any piping and fittings shall be not less than four times the design pressure of the tank, and not less than four times that pressure to which, in any instance, it may be subjected in service, by the action of a pump or other device (not including safety relief valves) the action of which may be to subject certain portions of the tank piping to pressures greater than the design pressure of the tank.

(1) Welded pipe joints shall be used wherever possible. Joints in copper tubing where permitted shall be of the brazed type or of any equally strong metal union type. Melting point of brazing material must be not less than 1,000° F. Such joints shall in any event be of such a character as not to decrease the strength of the tubing, as by the cutting of threads.

(2) Fittings shall be extra heavy. Non-malleable metals shall not be employed in the construction of valves or fittings.

(3) Suitable provision shall be made in every case to allow for expansion, contraction, jarring and vibration of all pipe. Slip joints shall not be used for this purpose.

(4) Piping and fittings shall be grouped in the smallest practicable space and shall be protected from damage as required by the specification.

(5) All piping, valves and fittings on every tank shall be leakage tested with gas or air after installation and proved tight at not less than the design pressure of the tank on which they are used. In the event of replacement, all such piping, valves, or fittings so replaced shall be tested in accordance with the requirements of this section before the tank is returned to transportation service. The requirements of this section shall apply with equal force to all hose used on such tanks, except that such hose may be so tested either before or after installation on the tank.

(m) All materials of construction used in portable tank containers and their appurtenances shall not be subject to destructive attack by the contents of the tank.

(1) All parts of tanks and appurtenances for anhydrous ammonia shall be steel. No copper, silver, zinc, nor their alloys shall be permitted. Brazed joints shall not be permitted.

(n) Each outlet of portable tanks used for the transportation of liquefied compressed gases, except carbon dioxide, shall be provided with a suitable automatic excess-flow valve. These valves shall be located inside the tank or at a point outside the tank where the line enters or leaves the tank. The valve seat shall be located inside the tank or shall be located within a welded flange or its companion flange, or withir a nozzle, or within a coupling. The installation shall be made in such a manner as reasonably to assure that any undue strain which causes failure requiring functioning of the valve shall cause failure in such a manner that it will not impair the operation of the valve.

*Exception.* Safety device connections and liquid level gauging devices which are so constructed that the outward flow of tank contents shall not exceed that passed by a No. 54 drill size opening are not required to be equipped with excess-flow valves.

(1) Excess-flow valves shall close automatically at the rated flows of gas or liquid as specified by the valve manufacturer. The connections or lines on each side of the excess-flow valve, including valves, fittings, etc., shall have a greater capacity than the rated flow of the excess-flow valve.

(2) Excess-flow valves may be designed with a by-pass, not to exceed a No. 60 drill size opening, to allow equalization of pressures.

(3) Filling and discharge lines shall be provided with manually operated shut-off valves located as close to the tank as is practicable. The use of so-called "Stop-Check" valves to satisfy with one valve the requirements of this subparagraph and of paragraph (n) of this section, is forbidden.

(o) Each tank for carbon dioxide and nitrous oxide shall be lagged with a suitable insulation material of such thickness that the overall thermal conductance is not more than 0.08 Btu per square foot per degree F. differential in temperature per hour. The conductance shall be determined at 60° F. Insulation material used on tanks for nitrous oxide shall be noncombustible.

(p) A refrigerating and/or heating coil or coils may be installed in tanks for carbon dioxide and nitrous oxide. Such coils must be tested externally to at least the same pressure as the test pressure of the tank. The coils must also be tested internally to at least twice the working pressure of the heating or refrigerating system to be used but in no case less than the test pressure of the tank. Such coils shall be securely anchored. The refrigerant or heating medium to be circulated through the coil or coils must be such as to cause no adverse chemical reaction with the tank or tank contents in case of leakage.

### § 73.33 Qualification, maintenance, and use of cargo tanks.

(a) Except as otherwise provided in this section, every cargo tank used for the transportation of dangerous articles shall fulfill the requirements of the specification and regulations for the transportation of the particular commodity. A manufacturer's data report of the cargo tank shall be procured and retained in the files of the motor carrier during the time that such cargo tank is used for such service.

(1) Cargo tank containers for transportation as cargo on vessels in commerce subject to the jurisdiction of the United States Coast Guard shall not exceed a loaded weight of 20,000 pounds. Nothing contained in this section shall be so construed as to pertain to transportation on car floats and car ferries, nor shall such limitation in weight apply to trailerships or containerships if approved under Coast Guard Regulations.

(2) Cargo tanks to be used for the transportation of corrosive or flammable liquids shall be of the types prescribed by the regulations and maintained or retested in accordance with the requirements appearing in § 77.824 of this chapter.

(b) Any cargo tank constructed prior to May 15, 1950, complying with the requirements of either the A. S. M. E. Code for Unfired Pressure Vessels, 1946 Edition, or the A. P. I.-A. S. M. E. Code for Unfired Pressure Vessels, 1943 Edition, for the transportation of liquefied compressed gases, may be used in that service, if it is retested every five years in accordance with the requirements of paragraph (k) (2), (3), and (4) of this section: *Provided,* It fulfills all the requirements of the regulations and specifications for cargo tanks for the transportation of the particular gas or gases to be transported therein, except in regard to the provisions of paragraph (b) (1) or (2) of this section, and shall be marked "ICC Specification MC330X" on the plate required by Specification MC330 (§ 78.336 of this chapter).

(1) Tanks designed and constructed in accordance with pars. U–68 or U–69 of the A. S. M. E. Code for the transportation of liquefied compressed gases may be used and may be re-rated at a working pressure 25 percent in excess of the design pressure for which the tank was originally constructed. If advantage is taken of the increased rating, the re-rated pressure shall be marked on the plate as follows:

Re-rated working pressure ___ psig.

Note 1: For purposes of setting safety relief valves and pressure control valves, and for purposes of establishing maximum and minimum design pressures, the re-rated working pressure shall be considered as the equivalent of the design pressure as defined in the specification.

(2) Loading and unloading accessories, valves, piping, fittings, safety and gauging devices, do not have to comply with the requirements for the particular location on the tank.

(c) Any cargo tank of ICC specification MC 320 [1] constructed or put in service on and after February 1, 1942, and prior to May 15, 1950, fulfilling the requirements of that specification may be continued in service for the transportation of any compressed gas for which specification MC 330 (§ 78.336 of this chapter) tanks are authorized if it is retested every five years in accordance with

the requirements of paragraphs (k) (2), (3), and (4) of this section: *Provided*, That it is in and can be maintained in safe operating condition for the transportation of that gas, and shall be marked "ICC Specification MC 320" on the plate required by specification MC 330 (§ 78.336 of this chapter).

(d) Any cargo tank of ICC Specification 7.6–S–1.2,[1] constructed or put into service on and after June 15, 1940, and prior to February 1, 1942, fulfilling the requirements of that specification may be continued in service for the transportation of a liquefied petroleum gas if it is retested every five years in accordance with the requirements of paragraph (k) (2), (3), and (4) of this section: *Provided*, That it is in and can be maintained in safe operating condition for the transportation of that gas, and shall be marked "ICC Specification MC–7.6–S–1.2" on the plate required by Specification MC330 (§ 78.336 of this chapter).

(e) Any cargo tank constructed prior to June 15, 1940, in accordance with either the A. S. M. E. or A. P. I.-A. S. M. E. Code for Unfired Pressure Vessels effective at the time of fabrication, and previously authorized under ICC Specification MC320,[1] may be continued in service for the transportation of a liquefied petroleum gas if retested annually in accordance with paragraph (k) (2), (3), and (4) of this section: *Provided*, That it is in and can be maintained in safe operating condition for the transportation of that gas and shall be marked "ICC Specification MC320Y" on the plate required by Specification MC330 (§ 78.336 of this chapter).

(f) Any cargo tank constructed other than prescribed in paragraphs (c), (d), and (e) of this section, and previously authorized under ICC Specification MC320,[1] may remain in service for the transportation of a liquefied petroleum gas only: *Provided*, That it is retested annually in accordance with the requirements of paragraph (k) (2), (3), and (4) of this section: *Provided*, That it is in and can be maintained in safe operating condition for the transportation of that gas: *Further provided*, That it must be equipped with all the safety devices and fittings required under this section and ICC Specification MC330 (§ 78.336 of this chapter) for the transportation of that gas, although they need not be mounted all in one place as required therein but must be adequately protected against the hazards of collision, overturn, or both, and, in addition, must be marked "ICC Specification MC320Z" on the plate required by Specification MC330.

(g) Cargo tanks of the specifications shown in subparagraph (1) of this paragraph, made prior to December 31, 1953, authorized for use under regulations of the Commission effective March 1, 1935, those effective June 15, 1940, or February 1, 1942, may be continued in use as previously authorized until further order of the Commission. Tanks now under construction under specification MC 310 may be so marked.

(1)

| Where these regulations call for specification numbers: | Containers made under the following specifications may also be used: |
|---|---|
| MC 200 | 7.2–S–1. |
| MC 201 | 7.2. |
| MC 300 | 7.3–S–1.2. |
| MC 301 | 7.3–S–1.3. |
| MC 302 | 7.3–S–1.4. |
| MC 303 | 7.3–S–1.5. |
| MC 310 | 7.5–S–1.2. |
| MC 311 | MC 310 and 7.5–S–1.2. |
| MC 330 | MC 320. |

(h) Any novel cargo tank which has been or may be authorized for the transportation of a particular dangerous article may be continued in or placed in service only under the terms specifically prescribed by the Commission.

(i) Notwithstanding any of the provisions of paragraphs (a) to (h) of this section, any cargo tank constructed prior to May 15, 1950, which can qualify under and fulfill all of the requirements of any of the specifications and regulations for cargo tanks prescribed for the transportation of a particular dangerous article may be put into service and marked under the terms of such specification.

(j) The Commission may, upon written request for such authorization by a motor carrier, authorize the use of limited numbers, and for limited times, of new cargo tanks which fail to meet the requirements of the specification for cargo tanks contained in Part 78 of this chapter. In the event of such request for authorization, the carrier shall furnish those details concerning the design and construction of the tank motor vehicle and the cargo tank as seem necessary for the determination of its ability to transport safely the proposed commodity.

(k) Cargo tanks used for transportation of liquefied compressed gases shall be retested in accordance with the following and shall not be kept in or returned to transportation service unless they shall have successfully withstood the following prescribed tests, as appropriate in each instance:

(1) Every cargo tank which is constructed in accordance with or fulfilling the requirements of ICC Specification MC 330 shall be tested at least once in every five years in accordance with paragraphs (k) (2), (3), and (4) of this section, except that tanks and safety valves of cargo tanks used for the transportation of chlorine must be retested at intervals of two years or less.

(2) The tank less any fittings shall be subjected to a hydrostatic pressure of one and one-half times the design pressure (maximum allowable working pressure or re-rated pressure) of the tank.

(3) The tank shall be inspected for corroded areas, bad dents, or other conditions, including leakage under test pressure, which indicate weakness that might render the tank unsafe for transportation service, and shall be rejected if evidence of any such unsafe condition is discovered.

(4) The tank lagging, if any, and its jacket need not be removed from lagged tanks unless it is found to be impossible to reach test pressure and maintain a condition of pressure equilibrium after test pressure is reached during tank retesting.

(5) Every tank not complying in all respects with the prescribed specifications, but otherwise allowable under this part, shall successfully withstand the identical tests at test periods required for "specification tanks" by subparagraphs (2), (3), and (4) of this paragraph. Nonspecification tanks (paragraphs (e) and (f) of this section) shall be tested at least once in every calendar year as required in subparagraphs (2), (3), and (4) of this paragraph. Tanks constructed in accordance with Pars. U–68 or U–69 of the A. S. M. E. Code, and which have not been re-rated, must be retested at a hydrostatic pressure of twice the design pressure.

(6) Every cargo tank which shall have been authorized by the Commission to transport dangerous articles under the provisions of paragraph (j) of this section shall be tested under requirements specifically set forth in the terms of such authorization.

(7) Without regard to any other retest requirement, any tank that shows evidence at any time of bad dents, corroded areas, leakage, or other conditions that indicate weakness which might render the tank unsafe for transportation service, shall be retested as prescribed by paragraph (k) (2), (3), and (4) of this section.

(8) Any tank which has been in an accident and which has been damaged to an extent likely to cause it to be in unsafe condition or to an extent where such a condition is suspected, shall be tested as prescribed by paragraph (k), (2), (3), and (4) of this section.

(9) Any tank which has been out of transportation service for a period of one year or more shall not be returned to or placed in such service until it shall have successfully fulfilled the testing requirements prescribed by paragraph (k) (2), (3), and (4) of this section.

(10) The Commission may require the testing under prescribed conditions of any tank when probable cause appears for suspecting that such tank is in unsafe condition.

(l) The repair of tanks is authorized, provided such repairs are made under requirements prescribed in the "Code" for its original design and construction.

(1) In addition to any other provisions of the specification, no tank shall be repaired, or remodeled, as to cause leakage or cracks or likelihood of leakage or cracks, by areas of stress concentration due to shrinkage of cooling metal in welding operations, sharp fillets, reversal of stresses, or otherwise.

(2) No field welding shall be done except to non-pressure parts.

(m) On tanks used for compressed gases (except chlorine for which provisions are made at subparagraphs (9) to (11) of this paragraph), the bursting strength of any piping and fittings shall be not less than four times the design pressure of the tank, and not less than four times that pressure to which, in any instance, it may be subjected in service, by the action of a pump or other device (not including safety relief valves) the action of which may be to subject certain portions of the tank piping to pressures greater than the design pressure of the tank.

[1] Use of existing cargo tanks authorized, but new construction not authorized.

(1) Welded pipe joints shall be used wherever possible. Joints in copper tubing shall be of the brazed type where permitted or of any equally strong metal union type. Melting point of brazing material must be not less than 1000° F. Such joints shall in any event be of such a character as not to decrease the strength of the tubing, as by the cutting of threads.

(2) Fittings shall be extra heavy. Non-malleable metals shall not be employed in the construction of valves or fittings.

(3) Suitable provision shall be made in every case to allow for expansion, contraction, jarring, and vibration of all pipe. Ship joints shall not be used for this purpose.

(4) Piping and fittings shall be grouped in the smallest practicable space and shall be protected from damage as required by the specification.

(5) All hose, wherever used, shall be designed for a bursting pressure not less than four times the design pressure of the tank with which it is used, and not less than four times that pressure to which, in any instance, it may be subjected in service by the action of a pump or other device, the action of which may be to subject the hose to pressures greater than the design pressure of the tank. Any coupling used on hose to make connections shall be designed for a pressure not less than 20 percent in excess of the design pressure of the hose and shall be so designed that there will be no leakage when connected.

(6) All piping, valves, and fittings on every tank motor vehicle shall be proved free from leaks at not less than the design pressure for the tank. This condition will be considered to have been met when such piping, valves, and fittings have been tested for leakage with gas or air after installation and proved tight at not less than the design pressure marked on the cargo tank with which they are used. In the event of replacement, all such piping, valves, or fittings so replaced shall be tested in accordance with the requirements of this section before the tank is returned to transportation service. The requirements of this section shall apply with equal force to all hose used on such tanks, except that such hose may be so tested either before or after installation on the tank.

(7) Liquid pumps or gas compressors, wherever used, must be of suitable design, adequately protected against breakage by collisions, and kept in good condition. They may be driven by motor vehicle power take-off or other mechanical, electrical, or hydraulic means. Unless they are of the centrifugal type, they shall be equipped with suitable pressure actuated by-pass valves permitting flow from discharge to suction or to the tank. Liquid pumps shall not be used on tanks for the shipment of sulphur dioxide.

(8) Each tank used for the shipment of carbon dioxide or nitrous oxide shall be provided with a suitable pressure gauge. A shut-off valve must be installed between the pressure gauge and the tank. This gauge need be used only during the filling operation.

(9) On cargo tank motor vehicles for the transportation of chlorine, no piping, hose, or other means of loading or unloading shall be attached to the angle valves required by paragraph (o) (4) of this section except at the time of loading or unloading, nor shall any hose, piping, or tubing used for loading or unloading be mounted on or carried on the vehicle nor shall such devices be considered as part of the cargo tank motor vehicle. On cargo tank motor vehicles for the transportation of chlorine, except at the time of loading or unloading, pipe connections of the angle valves must be closed with screw plugs, chained or otherwise fastened to prevent misplacement.

(10) Angle valves on chlorine cargo tank motor vehicles shall be tested at not less than 225 p. s. i. g., using dry air or inert gas, before installation of such valves on the cargo tank, and such tests shall be made before each loading. The valves and gasketed joints shall be inspected for leaks, at a pressure of not less than 50 p. s. i. g., after loading and prior to shipment, and such inspections shall be made for each loading. Leaks which are detected shall be corrected before the cargo tank motor vehicle is shipped.

(11) Liquid chlorine pumps shall not be installed on cargo tank motor vehicles used for the shipment of chlorine.

(n) All materials of construction used in cargo tanks and their appurtenances shall not be subject to destructive attack by the contents of the tank.

(1) All parts of tanks and appurtenances for anhydrous ammonia shall be steel. No copper, silver, zinc, nor their alloys shall be permitted. Brazed joints shall not be permitted.

(o) Each outlet of cargo tanks used for the transportation of liquefied compressed gases, except carbon dioxide, shall be provided with an approved suitable automatic excess-flow valve or in lieu thereof may be fitted with an approved automatic quick-closing internal valve. These valves shall be located inside the tank or at a point outside the tank where the line enters or leaves the tank. The valve seat shall be located inside the tank or shall be located within a welded flange or its companion flange, or within a nozzle, or within a coupling. The installation shall be made in such a manner as reasonably to assure that any undue strain which causes failure requiring functioning of the valve shall cause failure in such a manner that it will not impair the operation of the valve.

*Exception.* Safety device connections and liquid level gauging devices which are so constructed that the outward flow of tank contents shall not exceed that passed by a No. 54 drill size opening are not required to be equipped with excess-flow valves.

(1) Excess-flow valves shall close automatically at the rated flows of gas or liquid as specified by the valve manufacturer. The connections or lines on each side of the excess-flow valve, including valves, fittings, etc., shall have a greater capacity than the rated flow of the excess-flow valve.

(2) Excess-flow valves may be designed with a by-pass, not to exceed a No. 60 drill size opening, to allow equalization of pressures.

(3) Filling and discharge lines shall be provided with a shut-off valve located as close to the tank as is practicable, except where an automatic quick-closing internal valve or an automatic shut-off valve is used, in which case a manually operated shut-off valve shall be located anywhere in the line ahead of the hose connection.

NOTE 1: The use of so-called "Stop-Check" or excess flow valves to satisfy with one valve the requirements of this rule and of paragraph (o) of this section is forbidden.

(4) Angle valves and excess-flow valves on chlorine tank motor vehicles shall conform to the standards of the Chlorine Institute, Inc. Angle valves to conform with Dwg. 104–4 dated May 5, 1958. Excess-flow valves conforming with Dwg. 101–3 dated January 23, 1959 shall be installed under each liquid angle valve and the excess-flow valves conforming with Dwg. 106–1 dated July 24, 1959 shall be installed under each gas angle valve.

(p) Each tank for chlorine, carbon dioxide, and nitrous oxide shall be insulated with a suitable insulation material of such thickness that the overall thermal conductance is not more than 0.08 Btu per square foot per degree F. differential in temperature per hour. The conductance shall be determined at 60° F. Insulation material used on tanks for nitrous oxide shall be non-combustible. Insulation material used on tanks for chlorine shall be corkboard with minimum thickness of 4 inches.

(q) A refrigerating and/or heating coil or coils may be installed in tanks for carbon dioxide and nitrous oxide. Such coils must be tested externally to at least the same pressure as the test pressure of the tank. The coils must also be tested internally to at least twice the working pressure of the heating or refrigerating system to be used but in no case less than the test pressure of the tank. Such coils shall be securely anchored. The refrigerant or heating medium to be circulated through the coil or coils must be such as to cause no adverse chemical reaction with the tank or tank contents in case of leakage. If desired, the unit furnishing refrigeration may be mounted on the motor vehicle.

**§ 73.34 Qualification, maintenance and use of cylinders.**[1]

(a) *General qualification for use of cylinders.* (See §§ 73.1 through 73.30 for requirements applying to all shipments.)

(1) Gases must be in cylinders as specified, and such cylinders used more than once (refilled and reshipped after having been previously emptied) must be in such condition, including closing devices and cushioning materials, that they will protect their contents during transit as efficiently as new cylinders.

(2) When cylinders with a marked pressure limit are prescribed, other cylinders made under the same specification but with a higher marked service pressure limit are authorized. For example, cylinders marked ICC–4B500 may be used where ICC–4B300 is specified.

(3) A cylinder in domestic use previous to the date upon which specification therefor was first made effective may be used if the cylinder has been

[1] Requirements covering cylinders are also applicable to spherical pressure vessels.

properly tested and otherwise complies with the requirements applicable for the gas charged therein.

(b) *Change of marked service pressure.* Marked service pressure may be changed only upon application to the Bureau of Explosives and receipt of written instructions as to the procedure to be followed (see paragraph (c)(2) of this section). This is not authorized for cylinders which have failed to pass the prescribed periodic hydrostatic retest unless they are reheat-treated and requalified in accordance with applicable requirements.

(c) *Change of marking.* Each cylinder must be marked in accordance with the specification under which it was made. Marking on cylinders must not be changed except as follows:

(1) Additional markings not affecting any of the prescribed markings may be made in accordance with marking requirements of the specification.

(2) Test pressure or service pressure markings may be changed when service pressure is changed in accordance with paragraph (b) of this section.

(3) Changes may be made in serial numbers and in the identification symbols by the owners. Identification symbols must be registered and approved by the Bureau of Explosives. Before remarking, a report in sufficient detail that previous serial numbers and identification symbols can be determined for each cylinder, arranged by lot numbers or consecutive serial numbers, must be made to the Bureau of Explosives and approval received before markings are changed.

(4) When the space originally provided for dates of subsequent retests becomes filled, the stamping of additional test dates into the external surface of footrings of cylinders is authorized.

(5) All prescribed markings on each cylinder must be maintained in a readable condition, or copy of said markings reproduced by stamping on metal plates may be permanently secured to the cylinder.

(d) *Safety relief devices.* Each cylinder charged with compressed gas, unless excepted in this paragraph, must be equipped with one or more safety relief devices approved, as to type, location, and quantity, by the Bureau of Explosives and must be capable of preventing explosion of the normally charged cylinder when it is placed in a fire. Cylinders shall not be shipped with leaking safety relief devices. Safety relief devices must be tested for leaks before the charged cylinder is shipped from the cylinder filling plant; it is expressly forbidden to repair leaking fuse plug devices, where leak is through the fusible metal or between the fusible metal and the opening in the plug body, except by removal of the device and replacement of the fusible metal.) Exceptions are as follows:

(1) Except as provided in Notes 1, 2, and 3, safety relief devices are not required on cylinders 12 inches or less in length, exclusive of neck, and 4½ inches or less in outside diameter.

NOTE 1: Safety relief devices are required on specs. 9, 40, and 41 (§§ 78.63, 78.66, and 78.67 of this chapter) cylinders.

NOTE 2: Safety relief devices are required on cylinders charged with a liquefied gas for which this part requires a service pressure of 1,800 psi or higher.

NOTE 3: Safety relief devices are required on cylinders charged with nonliquefied gases to a pressure of 1,800 psi or higher at 70° F.

(2) Safety relief devices are not required on cylinders charged with nonliquefied gas, except acetylene in solution, under pressure of 300 psi or less at 70° F.

(3) Safety relief devices are prohibited on cylinders charged with class A poisonous gas or liquid as defined in § 73.326 (a).

(4) Safety relief devices are prohibited on cylinders charged with fluorine.

(5) Safety relief devices are not required on cylinders charged with methyl mercaptan; with mono-, di-, or trimethylamine, anhydrous; with not over 10 pounds of nitrosyl chloride; or with less than 165 pounds of anhydrous ammonia.

(6) Safety relief devices are not required on drums containing liquefied petroleum gas as provided for in § 73.304 (d)(3)(ii).

(e) *Periodic retesting and reinspection of cylinders.* Each cylinder becomes due for periodic retest in accordance with the following table and exceptions thereto:

| Specification under which cylinder was made | Minimum retest pressure (psi) | Retest period (years) |
|---|---|---|
| ICC-3 | 3,000 psi | 5. |
| 3A, 3AA | 5/3 times service pressure, except noncorrosive service (see § 73.34(e)(11). | 5. |
| 3B, 3BN | 2 times service pressure | 5. |
| 3C | Retest not required | 5. |
| 3D | 5/3 times service pressure | 5. |
| 3E | Retest not required | |
| 3HT | 5/3 times service pressure | 3 (see § 73.34(e)(13). |
| 4 | 700 psi | 10. |
| 4A | 5/3 times service pressure | 5. |
| 4AA480 | 2 times service pressure | 5. |
| 4B, 4BA, 4B240ET | 2 times service pressure, except noncorrosive service (see § 73.34 (e)(9) and (e)(10). | 5. |
| 4C | Retest not required | |
| 4D, 4DA, 4DS | 2 times service pressure | 5. |
| 4E | do | 5. |
| 4L | Retest not required | |
| 7 | do | |
| 7-150 for liquefied petroleum gas. | 300 psi | 5. |
| 8, 8AL | Retest not required | |
| 9 | 400 psi (maximum 600 psi) | 5 (see § 73.34(e)(15). |
| 25 | 500 psi | 5. |
| 26 for filling at over 450 psi. | 5/3 time service pressure | 5. |
| 26 for filling at 450 psi and below. | 2 times service pressure, except noncorrosive service (see § 73.34 (e)(9) and (e)(10). | 5. |
| 33 | 800 psi | 5. |
| 38 | 500 psi | 5. |
| Any cylinder with marked test pressure. | Retest at marked test pressure | 5. |
| Foreign cylinder charged for export. | As marked on the cylinder, but not less than 5/3 of any service or working pressure marking. | See § 73.301(j). |

NOTE 1: For cylinders not marked with a service pressure, see § 73.301 (e) (1).

(1) This periodic retest must include a visual internal and external examination together with a test by interior hydrostatic pressure in a water jacket or other apparatus of suitable form for the determination of the expansion of the cylinder. The test apparatus must be approved as to type and operation by the Bureau of Explosives. The internal inspection may be omitted for cylinders of the type and in the service described under subparagraphs (9) and (10) of this paragraph.

(2) Cylinders of ICC-4 series, without regard to date of previous test, that show bad dents or other evidence of rough usage, or that are corroded locally to such extent as to indicate possible weakness, or that have lost as much as 5 percent of their official tare weight, must be retested before being again charged and shipped. After any retest, the actual tare weight for those cylinders passing the test may be recorded as their new official tare weight.

(3) In hydrostatic retesting of a cylinder the pressure must be maintained for at least 30 seconds and as much longer as may be necessary to secure complete expansion of the cylinder. The gauge indicating the total expansion of the cylinder must be such that the total expansion can be read with an accuracy of 1 percent, except that a reading to 0.1 cubic centimeter shall be acceptable. The gauge indicating the pressure must be capable of being read to within 1 percent of the test pressure. Any internal pressure applied previous to the test pressure shall not exceed 90 percent of the test pressure. If, due to failure of the test apparatus, the test pressure cannot be maintained, the test may be repeated at a pressure increased by 10 percent or 100 psi, whichever is the lower value.

(4) A cylinder must be condemned when it leaks, or when internal or external corrosion, denting, bulging, or evidence of rough usage exists to the extent that the cylinder is likely to be weakened appreciably, or when the permanent expansion exceeds 10 percent of the total expansion, except that for ICC-4E aluminum cylinders, when the permanent expansion exceeds 12 percent of the total expansion. Except for ICC-4E aluminum cylinders, a cylinder condemned for excessive permanent expansion may be reheat-treated. (See paragraph (g) of this section.) ICC-4 series cylinders, condemned for other than excessive permanent expansion, may be repaired and rebuilt as otherwise provided in this section.

(5) Records showing the result of reinspection and retest must be kept by the owner or his authorized agent until either expiration of the retest period, or until the cylinder is again reinspected or retested, whichever occurs first.

(6) Each cylinder passing the reinspection and retest must be marked with the date, (month and year), plainly and permanently stamped into the metal of the cylinder. For example, "4–57" for April, 1957. The dash between the month and year figures may be replaced by the mark of the testing or inspecting agency. Stamping must be in accordance with marking requirements of the specification. Dates of the previous tests must not be obliterated.

(7) Cylinders in chlorine or sulfur dioxide service made before April 20, 1915, must be retested at 500 psi.

(8) For cylinders of not over ten pounds water capacity which are authorized for service pressures not over 300 psi, the hydrostatic testing portion of the retest procedure may consist of application of the prescribed internal hydrostatic test pressure without the use of special apparatus and without the determination of total and permanent expansions. In this test the cylinders shall be examined while under pressure and must show no leak or other harmful defect as enumerated in subparagraph (4) of this paragraph.

(9) Cylinders made in compliance with specifications ICC–4B, ICC–4BA and ICC–26–300 [1], (§§ 78.50 and 78.51 of this chapter) used exclusively for anhydrous dimethylamine, anhydrous monomethylamine, anhydrous trimethylamine, methyl chloride, liquefied petroleum gas, or dichlorodifluoromethane, difluoroethane, difluoromonochloroethane, monochlorodifluoromethane, monochlorotetrafluoroethane, monochlorotrifluorethylene or mixtures thereof or mixtures of one or more with trichloromonofluoromethane, commercially free from corroding components, and protected externally by suitable corrosion resisting coatings (such as galvanizing, painting, etc.) may be retested decennially (see Note 2) instead of quinquennially, or, such cylinders may be subjected to an internal hydrostatic pressure equal to at least 2 times the marked service pressure without determination of expansions (see Note 1), but this type of test must be repeated quinquennially after expiration of the first 10-year period (see Note 2). When subjected to this latter test cylinders must be carefully examined under the test pressure and removed from service if leaks or other harmful defects exist. All tests must be supplemented by a very careful examination of the cylinder at each filling, and must be rejected if evidence is found of bad dents, corroded areas, a leak or other conditions that indicate possible weakness which would render the cylinder unfit for service.

NOTE 1: Cylinders tested by the modified hydrostatic method shall be marked after each retest with the date of test as otherwise required but followed by the symbol S; for example, 8–57S indicating retest by the modified method in August, 1957.

NOTE 2: Until further order of the Commission, the decennial retest period may be extended to a 12-year period, and the quinquennial retest period may be extended to a 7-year period after expiration of the first 12-year period.

(10) Cylinders made in compliance with the specifications listed in the table below and used exclusively in the service indicated may, in lieu of the periodic hydrostatic retest, be given a complete external visual inspection at the time such periodic retest becomes due:

| Cylinders made in compliance with— | Used exclusively for— |
|---|---|
| ICC–3A480, ICC–3AA480, ICC–3A480X, ICC–3B, ICC–4B, ICC–4BA, ICC–26–240,[1] or ICC–26–300.[1] | Liquefied petroleum gas which is commercially free from corroding components. |
| ICC–4, ICC–3A480, ICC–3AA480, ICC–3A480X, ICC–4A480, or ICC–4AA480. | Anhydrous ammonia of at least 99.95 percent purity. |
| ICC–3A480, ICC–3AA480, ICC–3A480X, ICC–4B300, or ICC–4BA300. | Fluorinated hydrocarbons and mixtures thereof which are commercially free from corroding components. |
| ICC–3A480, ICC–3AA480, ICC–3A480X, ICC–3B, ICC–4B, ICC–4BA, ICC–26–240,[1] or ICC–26–300.[1] | Butadiene, inhibited, which is commercially free from corroding components. |
| ICC–3A480, ICC–3AA480, ICC–3A480X, ICC–3B, ICC–4B, ICC–4BA, ICC–26–240,[1] or ICC–26–300.[1] | Liquefied hydrocarbon gas which is commercially free from corroding components. |

[1] Use of existing cylinders authorized, but new construction not authorized.

When this inspection is used in lieu of hydrostatic retesting, subsequent inspections are required 5 years after the first such inspection and periodically at 5-year intervals thereafter. Inspections shall be made only by competent persons and the results shall be recorded on a suitable data sheet, the completed copies of which shall be kept as a permanent record. The points to be recorded and checked on these data sheets are: Date of inspection (month and year); ICC specification number; cylinder identification (registered symbol and serial number, date of manufacture, and ownership symbol (if needed for adequate identification)); type cylinder protective coating (painted, etc., and statement as to need of refinishing or recoating); conditions checked (leakage, corrosion, gouges, dents or digs in shell or heads, broken or damaged footring or protective ring or fire damage); disposition of clyinders (returned to service, to cylinder manufacturer for repairs or scrapped); a cylinder which passes the inspection prescribed shall have the date recorded in the manner presently prescribed for the recording of the retest date, except that an "E" is to follow the date (month and year) indicating requalification by the external inspection method. All inspections must be supplemented by a very careful examination of the cylinder at each filling, and must be rejected if evidence is found of bad dents, corroded areas, a leak or other conditions that indicate possible weakness which would render the cylinder unfit for service.

(11) Cylinders made in compliance with specification ICC–3A480, ICC–3A480X, and ICC–4AA480 (§§ 78.36, 78.43, 78.56 of this chapter), used exclusively for anhydrous ammonia, commercially free from corroding components, and protected externally by suitable corrosion resisting coatings (such as painting, etc.) may be retested decennially instead of quinquennially. All tests must be supplemented by a very careful examination of the cylinder at each filling, and the cylinder must be rejected if evidence is found of bad dents, corroded areas, a leak or other conditions that indicate possible weakness which would render the cylinder unfit for service.

(12) All cylinders not exceeding 2 inches outside diameter and length less than 2 feet are exempted from hydrostatic retest.

(13) In addition to the requirements of this paragraph (e) cylinders marked ICC–3HT shall comply with the following:

(i) Cylinders shall be subjected, at least once in three years, to a test by hydrostatic pressure in a water jacket, for the determination of the expansion of the cylinder. A cylinder must be condemned if the elastic expansion exceeds the original elastic expansion by more than 5 percent.

(ii) A cylinder must be condemned if there is evidence of any denting or bulging.

(iii) A cylinder must be condemned at the termination of a 12-year period following the date of the original test or after 4,380 pressurizations (12×365), whichever comes first. If a cylinder is recharged more than once a day, an accurate record of the number of such rechargings must be maintained.

(iv) Retest dates shall be applied by low stress type steel stamping to a depth no greater than that of the original marking at the time of manufacture. Stamping on sidewall not authorized.

(14) Cylinders made in compliance with specifications ICC–3A, 3AA, 3B, 4A, 4BA (§§ 78.36, 78.37, 78.38, 78.49, 78.51 of this chapter), having service pressures up to and including 300 psi, used exclusively for methyl bromide, liquid, mixtures of methyl bromide and ethylene dibromide, liquid, mixtures of methyl bromide and chlorpicrin, liquid, mixtures of methyl bromide and petroleum solvents, liquid, or methyl bromide and non-flammable, non-liquefied compressed gas mixtures, liquid, commercially free from corroding components, and protected externally by suitable corrosion resisting coatings (such as galvanizing, painting, etc.) and internally by a suitable corrosion resisting lining (galvanized, etc.) may be tested decennially instead of quinquennially. All tests must be supplemented by a visual internal and external examination of the cylinder quinquennially. Examination shall be as required by the Compressed Gas Association's "Standard for Visual Inspection of Compressed Gas Cylinders." (CGA Pamphlet C–6–1959, available from the Compressed Gas Association, Inc., 500 Fifth Avenue, New York 36, N.Y.) All tests must be supplemented by a very careful examination of the cylinder at each filling, and the cylinder must be rejected if evidence is found of bad dents, corroded areas, a leak or other conditions that indicate possible weakness which would render the cylinder unfit for service.

(15) All prescribed markings shall be maintained in a legible condition and if at any time the cylinder (spec. ICC–9) is returned for refilling and such marks are illegible, then the cylinder must not be returned to service until it has been retested as prescribed in § 78.63–13(a) of this chapter, and a new test date applied.

(f) *Cylinders subjected to the action of fire.* A cylinder which has been subjected to the action of fire must not again be placed in service until it has been properly reconditioned as follows:

(1) A cylinder made of plain carbon steel with not over 0.25 percent carbon nor over 0.90 manganese need not be reheat-treated but must pass the periodic retest requirements as specified in paragraph (e) of this section.

(2) ICC–8 cylinders made of plain carbon steel with not over 0.25 percent carbon nor over 0.90 percent manganese must be reinspected to determine the condition of the cylinder and the porous filling. If the cylinder is undamaged and the filler is unchanged and intact, the cylinder may be returned to service without reheat treatment or test.

(3) The inner cylinders made under specification ICC–4L (§ 78.57 of this chapter) may be used after again passing the original hydrostatic test.

(4) ICC–4E aluminum cylinders must be removed from service.

(5) Other cylinders must be reheat treated and reconditioned as specified in paragraph (g) of this section.

(g) *Reheat treatment.* (1) Previous to the reheat treatment procedure hereinafter prescribed, each cylinder must be subjected to a careful internal and external inspection.

(2) Cylinders must be segregated for reheat treatment in lots of 100 or less cylinders of the same general size having practically the same chemical composition.

(3) The reheat treatment operation must be carried out, supervised, and reported as prescribed for the heat treatment in the specification covering the manufacture of the cylinder in question. Data from the original reports of manufacture of the cylinders must be available.

(4) The reheat treatment must be followed by hydrostatic retest, such retest to be carried out, supervised, and reported as prescribed for the hydrostatic tests in the specification covering the manufacture of the cylinder in question. The results of the retest must meet either of the following conditions:

(i) The permanent expansion shall be from zero to 10 percent of the total expansion in the hydrostatic retest and one cylinder from each lot shall pass the requirements of the flattening and physical tests prescribed. Failure to pass the flattening or physical tests will reject the lot or;

(ii) The permanent expansion shall not be less than 3 percent nor more than 10 percent of the total expansion in the hydrostatic retest, in which case the flattening and physical tests are not required. For this alternative method the hydrostatic retest pressure shall not exceed 115 percent of the minimum prescribed test pressure except with specific approval of the Bureau of Explosives.

(h) *Repair by welding or brazing of specifications ICC–3A, 3AA, 3B, 3C cylinders.* Repair of specifications ICC–3A, 3AA, 3B or 3C (§ 78.36, 78.37, 78.38 or 78.40 of this chapter) cylinders by welding or brazing authorized, but only for the removal and replacement of neckrings and footrings attached to cylinders originally manufactured to conform to §§ 78.36–9(a), 78.37–9(a), 78.38–9(a), and 78.40–9(a) of this chapter. Removal and replacement must be done by a regular manufacturer of this type of cylinder. After removal and before replacement of such parts, cylinders must be inspected, and defective ones rejected. Cylinders, neckrings, footrings, and method of replacement must conform to § 78.36–9(a), § 78.37–9(a), § 78.38–9(a), or § 78.40–9(a) of this chapter whichever applies. Replacement must be followed by reheat treating, testing, inspection, and supervised and reported as prescribed by the specification covering their original manufacture. Inspector's reports must conform with that required by the specification covering original manufacture with the word "repaired" substituted for "manufactured." Show original markings and the new additional markings added, and statement: "Cylinders were carefully inspected for defects after removal of neckrings and footrings and after replacement, which replacement was made by process of _____."
(Welding-brazing)

(i) *Repair by welding or brazing of ICC–4 series, and ICC–8, welded or brazed cylinders.* Repairs on ICC–4 series and ICC–8 series welded or brazed cylinders are authorized to be made by welding or brazing. Such repairs must be made by a manufacturer of these types of ICC cylinders or by a repair facility authorized by the Bureau of Explosives and by a process similar to that used in its manufacture and under the following specific requirements:

(1) Cylinders with injurious defects in welded joints in or on pressure parts must be repaired by completely removing the defect prior to rewelding.

(2) Cylinders with injurious defects in brazed joints in or on pressure parts must be repaired by rebrazing.

(3) Cylinders during welding must be free of materials in contact with the welded joint that may impair the serviceability of the metal in or adjacent to the weld. (Precautions must be taken to prevent acetylene cylinder steels from picking up carbon during repair.)

(4) Neckrings, footrings, or other nonpressure attachments authorized by the specification may be replaced or repaired. Repair or replacement of footrings, neckrings, or other nonpressure attachments authorized by the specification for ICC–4BA and 8AL (§§ 78.51 and 78.60 of this chapter) cylinders may be made without conforming to the requirements of subparagraph (i)(6) of this section provided the following requirements are met:

(i) Must be done by a manufacturer of these types of ICC cylinders or by a repair facility authorized by the Bureau of Explosives.

(ii) The welder shall have available to him information as to the procedure, equipment, and rod used during manufacture and shall use a similar method for repair.

(iii) Repairs must be by metal arc welding only. Welds shall be 3 inches maximum length and spaced at least 3 inches apart.

(iv) Welds shall not be made on or near a brazed joint (to prevent the possibility of copper penetration).

(v) After repair the welds are to be inspected visually for weld quality.

(vi) After repair the weld area is to be leak tested at the service pressure of the cylinder.

(5) After removal, and before replacement of attachments, cylinders must be inspected and defective ones rejected, repaired or rebuilt.

(6) After repair, cylinders must be reheat-treated, tested, inspected and reported when and as prescribed by the specification covering their original manufacture when welding or brazing seams in a pressure part of a cylinder; or when welding or brazing on pressure parts of cylinders of plain carbon steels with carbon over 0.25 percent or manganese over 1.00 percent or of alloy steels, except that the physical and flattening tests may be omitted when the cylinders are not reheat-treated.

NOTE 1: Heat-treatment is not required after welding or brazing weldable low carbon parts to attachments of similar material which has been previously welded or brazed to the top or bottom of cylinders and properly heat-treated, provided such subsequent welding or brazing does not produce a temperature in excess of 400° F. in any part of the top or bottom material.

(7) Repair of cylinders must be followed by a proof pressure leakage test at prescribed test pressure and visual examination for weld quality when welding or brazing on pressure parts of cylinders of plain carbon steel with carbon 0.25 percent or less and manganese 1.00 percent or less.

(j) *Repair of non-pressure attachments.* Repair of non-pressure attachments by welding or brazing without affecting a pressure part of the cylinder must be followed by visual examination for weld quality.

(k) *Prohibited repairs.* Walls, heads or bottoms of cylinders with injurious defects or leaks in base metal shall not be repaired, but may be replaced as provided for in paragraph (l) of this section.

(l) *Rebuilding of ICC–4 series and ICC–8, welded or brazed cylinders.* Rebuilding of ICC–4 series and ICC–8 series, welded or brazed cylinders is authorized. Such rebuilding must be done by a manufacturer of these types of ICC cylinders or by a repair facility authorized by the Bureau of Explosives and by a process similar to that used in its original manufacture and under the following specific requirements:

(1) The replacement of a pressure part such as wall, heads, or bottoms of cylinders or the replacement of the porous filling material, shall be considered as rebuilding.

(2) Rebuilt cylinders shall be considered as new cylinders and shall conform to all the requirements of the specifications applying, including verification of material, examination, inspection, etc., and the rendering of the proper reports to the purchaser, cylinder rebuilder, and the Bureau of Explosives. Report must show that cylinders were rebuilt.

(3) Information in sufficient detail regarding previous serial numbers and identification symbols must be filed with the Bureau of Explosives.

## Subpart B—Explosives; Definitions and Preparation

### § 73.50 An explosive.

(a) For the purpose of Parts 71–78 of this chapter an explosive is defined as any chemical compound, mixture, or device, the primary or common purpose of which is to function by explosion, i.e., with substantially instantaneous release of gas and heat, unless such compound, mixture, or device is otherwise specifically classified in Parts 71–78 of this chapter.

### § 73.51 Forbidden explosives.

(a) The offering of the following explosives for transportation by common carriers by rail freight, rail express, highway, or water is forbidden.

(b) Explosive compositions that ignite spontaneously or undergo marked decomposition when subjected for 48 consecutive hours to a temperature of 75° C. (167° F.).

(c) Explosives containing an ammonium salt and a chlorate.

(d) Liquid nitroglycerin, diethylene glycol dinitrate or other liquid explosives not authorized by § 73.53 (e) and (h). (For shipment by carrier by motor vehicle other than common carriers, see § 77.822 (b) of this chapter).

(e) Explosives condemned by the Bureau of Explosives (except properly packed samples for laboratory examinations). Appeal may be made to the Commission from such condemnations.

(f) Leaking or damaged packages of explosives.

(g) Condemned or leaking dynamite must not be repacked and offered for shipment unless the repacking is done by a competent person in the presence of, or with the written consent of, an inspector, or with the written authority of the chief inspector of the Bureau of Explosives.

(h) Firecrackers, flash crackers, salutes, or similar commercial devices which produce or are intended to produce an audible effect, the explosive content of which exceeds 12 grains each in weight, and pest control bombs, the explosive content of which exceeds 18 grains each in weight; and any such devices, without respect to explosive content, which on functioning are liable to project or disperse metal, glass or brittle plastic fragments.

(i) Fireworks that combine an explosive and a detonator or blasting cap.

(j) Fireworks containing an ammonium salt and a chlorate.

(k) Fireworks containing yellow or white phosphorus.

(l) Fireworks or fireworks compositions that ignite spontaneously or undergo marked decomposition when subjected for 48 consecutive hours to a temperature of 75° C. (167° F.).

(m) Fireworks, properly condemned by the Bureau of Explosives, except properly repacked samples for laboratory examinations.

(n) Toy torpedoes, the maximum outside dimension of which exceeds ⅞ inch, or toy torpedoes containing a mixture of potassium chlorate, black antimony and sulfur with an average weight of explosive composition in each torpedo exceeding four grains.

(o) Toy torpedoes containing a cap composed of a mixture of red phosphorus and potassium chlorate exceeding an average of one-half (0.5) grain per cap.

(p) Fireworks containing copper sulfate and a chlorate.

(q) New explosives except samples for laboratory examination (see § 73.86) and military explosives approved by the Chief of Ordnance, Department of the Army; Chief, Bureau of Naval Weapons, Department of the Navy; or Commander, Air Force Systems Command and Commander, Air Force Logistics Command, Department of the Air Force. All other new explosives must be approved for transportation by the Bureau of Explosives.

(r) Loaded firearms.

### § 73.52 Acceptable explosives.

(a) For the purpose of Parts 71–78 of this chapter, acceptable explosives are divided into three classes as defined in this section, viz. (see § 72.5 of this chapter for restrictions for shipments by rail express).

(1) Class A explosives; detonating or otherwise of maximum hazard.

(2) Class B explosives; flammable hazard.

(3) Class C explosives; minimum hazard.

#### Class A Explosives; Definitions

### § 73.53 Definition of class A explosives.

(a) *Type 1.* Solid explosives which can be caused to deflagrate by contact with sparks or flame such as produced by safety fuse or an electric squib, but cannot be detonated (see Note 1) by means of a No. 8 test blasting cap (see Note 2). Example: Black powder and low explosives.

(b) *Type 2.* Solid explosives which contain a liquid explosive ingredient, and which, when unconfined (see Note 3), can be detonated by means of a No. 8 test blasting cap (see Note 2); or which can be exploded in at least 50 percent of the trials in the Bureau of Explosives' Impact Apparatus (see Note 4) under a drop of 4 inches or more, but cannot be exploded in more than 50 percent of the trials under a drop of less than 4 inches. Example: High explosives, commercial dynamite containing a liquid explosive ingredient.

(c) *Type 3.* Solid explosives which contain no liquid explosive ingredient and which can be detonated, when unconfined (see Note 3), by means of a No. 8 test blasting cap (see Note 2); or which can be exploded in at least 50 percent of the trials in the Bureau of Explosives' Impact Apparatus (see Note 4) under a drop of 4 inches or more, but cannot be exploded in more than 50 percent of the trials under a drop of less than 4 inches. Example: High explosives, commercial dynamite containing no liquid explosive ingredient, trinitrotoluene, amatol, tetryl, picric acid, urea nitrate, pentolite, and commercial boosters.

(d) *Type 4.* Solid explosives which can be caused to detonate when unconfined (see Note 3), by contact with sparks or flame such as produced by safety fuse or an electric squib; or which can be exploded in the Bureau of Explosives' Impact Apparatus (see Note 4), in more than 50 percent of the trials under a drop of less than 4 inches. Example: Initiating and priming explosives, lead azide, fulminate of mercury, etc., and high explosives.

(e) *Type 5.* Desensitized liquid explosives are explosives which may be detonated separately or when absorbed in sterile absorbent cotton, by a No. 8 test blasting cap (see Note 2); but which cannot be exploded in the Bureau of Explosives' Impact Apparatus (see Note 4), by a drop of less than 10 inches. The desensitizer must not be significantly more volatile than nitroglycerine and the desensitized explosive must not freeze at temperatures above minus 10° F. Example: High explosives, desensitized nitroglycerine.

(f) *Type 6.* Liquid explosives that can be exploded in the Bureau of Explosives' Impact Apparatus (see Note 4) under a drop of less than 10 inches. Example: Nitroglycerin. (See § 73.51 (d).)

(g) *Type 7.* Blasting caps (see Note 5) are small tubes, usually made of an alloy of either copper or aluminum, or of molded plastic closed at one end and loaded with a charge of initiating or priming explosives, class A—Type 4, either with or without other suitable explosives. The total weight of explosives per unit shall not exceed 150 grains. Blasting caps (see Note 5) which have been provided with a means for firing by an electric current, and sealed, are known as electric blasting caps.

(1) Detonating primers are devices for commercial use which contain a detonator and an additional charge of explosives, all assembled in a suitable envelope.

(2) Detonating fuzes, class A, are used in the military service to detonate the high explosive bursting charges of projectiles, mines, bombs, torpedoes, and grenades. In addition to a powerful detonator, they may contain several ounces of a high explosive, such as tetryl or dry nitrocellulose, all assembled in a heavy steel envelope. They may also contain a small amount of radioactive component. Those that are so made and packed that they will not cause functioning of other fuzes, explosives, or explosive devices in the same or adjacent containers are classed as class C explosives.

(h) *Type 8.* Any solid or liquid compound, mixture or device which is not specifically included in any of the above types, and which under special conditions may be so designated and approved by the Bureau of Explosives. Example: Shaped charges, commercial.

(1) A shaped charge, commercial, consists of a plastic, paper, or other suitable container comprising a charge of not to exceed 8 ounces of a high explosive containing no liquid explosive ingredient and with a hollowed-out portion (cavity) lined with a rigid ma-

terial. Detonators or other initiating elements shall not be assembled in the device unless approved by the Bureau of Explosives.

Note 1: The detonation test is performed by placing the sample in an open-end fiber tube which is set on the end of a lead block approximately 1½ inches in diameter and 4 inches high which, in turn, is placed on a solid base. A steel plate may be placed between the fiber tube and the lead block.

Note 2: A No. 8 test blasting cap is one containing two grams of a mixture of 80 percent mercury fulminate and 20 percent potassium chlorate, or a cap of equivalent strength.

Note 3: "Unconfined" as used in this section does not exclude the use of a paper or soft fiber tube wrapping to facilitate tests.

Note 4: The Bureau of Explosives Impact Apparatus is a testing device designed so that a guided 8-pound weight may be dropped from predetermined heights so as to impact specific quantities of liquid or solid materials under fixed conditions. Detailed prints may be obtained from the Bureau of Explosives, 63 Vesey Street, New York 7, New York.

Note 5: Blasting caps, blasting caps with safety fuse, or electric blasting caps in quantities of 1,000 or less are classified as class C explosives.

(i) *Ammunition for cannon.* Ammunition for cannon is fixed, semi-fixed or separate loading ammunition which is fired from a cannon, mortar, gun, howitzer or recoilless rifle.

(j) *Ammunition for cannon with projectiles.* Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles, or shell is fixed ammunition assembled in a unit consisting of the cartridge case containing the propelling charge and primer, and the projectiles, or shell, fuzed or unfuzed. Detonating fuzes, tracer fuzes, explosive or ignition devices, or fuze parts with explosives contained therein must not be assembled in ammunition or included in the same outside package unless shipped by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government or unless of a type approved by the Bureau of Explosives.

(k) *Explosive projectiles.* Explosive projectiles are shells, projectiles, warheads, or rocket heads, loaded with explosives or bursting charges, with or without other materials, for use in cannons, guns, tubes, mortars or other firing or launching devices.

(l) *Grenades.* Grenades, hand or rifle, are small metal or other containers designed to be thrown by hand or projected from a rifle. They are filled with an explosive or a liquid, gas, or solid material such as a toxic or tear gas or an incendiary or smoke producing material and a bursting charge. When shipped without explosives or bursting charges, see §§ 73.100 (y), 73.330, 73.350, and 73.385.

(m) *Explosive bombs.* Explosive bombs are metal or other containers filled with explosives. They are used in warfare and include aeroplane bombs and depth bombs.

(n) *Explosive mines.* Explosive mines are metal or composition containers filled with a high explosive.

(o) *Explosive torpedoes.* Explosive torpedoes, such as are used in warfare, are metal devices containing a means of propulsion and a quantity of high explosives.

(p) *Rocket ammunition.* Rocket ammunition (including guided missiles) consists of a completely assembled unit for launching from a tube, launcher, rails, trough or other launching device, in which the propellant material is a solid propellant explosive. Such unit consists of an igniter, a rocket motor or jet thrust unit, and a warhead, either fuzed or unfuzed, containing high explosives or chemicals.

(q) *Ammunition for small arms with explosive bullets or explosive projectiles.* Ammunition for small arms with explosive bullets or ammunition for small arms with explosive projectiles is fixed ammunition to be used in machine guns or similar fire arms and consists of a metallic cartridge case, the primer and the propelling charge, with explosive bullet or explosive projectile with or without detonating fuze, the component parts necessary for one firing being all in one assembly. Detonating fuzes, tracer fuzes, explosive or ignition devices or fuze parts with explosives contained therein must not be assembled in ammunition or included in the same outside package unless shipped by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government or unless of a type approved by the Bureau of Explosives.

(r) *Chemical ammunition.* Chemical ammunition used in warfare is all kinds of explosive chemical projectiles, shells, bombs, grenades, etc., loaded with toxic, tear, or other gas, smoke or incendiary agent, also such miscellaneous apparatus as cloud-gas cylinders, smoke generators, etc., that may be utilized to project chemicals.

(s) *Boosters, bursters, and supplementary charges.* Boosters and supplementary charges consist of a casing containing a high explosive and are used to increase the intensity of explosion of the detonator of a detonating fuze. Bursters consist of a casing containing a high explosive and are used to rupture a projectile or bomb to permit release of its contents.

(t) *Jet thrust units (jato), explosive, (class A), or igniters, jet thrust (jato), explosive, (class A).* Jet thrust units (jato), explosive (class A), are metal cylinders containing a mixture of chemicals capable of burning rapidly and producing considerable pressure. Under certain conditions the chemical fuel with which the unit is loaded may explode. Jet thrust units are designed to be ignited by an electric igniter. They are used to assist aeroplanes to take off, to propel large missiles and to drive moving targets for practice firing.

(1) Igniters, jet thrust (jato), explosive, (class A), are devices consisting of an electrically operated or remotely controlled igniting element and a fast-burning composition assembled in a unit for use in igniting the propelling charge of jet thrust units. Under certain conditions the burning composition may explode.

(u) *Charged oil well jet perforating guns.* Charged oil well jet perforating guns are steel tubes or metallic strips into which are inserted shaped charges connected in series by primacord. Shaped charges must be of a type described in paragraph (h) (1) of this section, except that each shaped charge installed in the steel tube or metallic strip shall contain not over 4 ounces of high explosive. Charged oil well jet perforating guns must not be transported with blasting caps, electric blasting caps, or other firing devices affixed to or installed in the guns.

(v) *Type 9.* Propellant explosives, class A, are solid chemicals or solid chemical mixtures which are designed to function by rapid combustion of successive layers, generally with little or no smoke. The combustion is controlled by composition, size, and form of grain. Propellant explosives, class A, include some types of smokeless powder and some types of solid propellant explosives for jet thrust units, rockets, or other devices. Any propellant explosive is class A which detonates in any one out of five trials when tested in the packages in which it is offered for transportation. In conducting the test, one propellant container shall be surrounded by inert loaded containers of the same weight, including one inert container placed on top of the propellant container. The propellant shall be ignited by means of a commercial electric squib placed within 4 inches of the bottom of the container. The presence of a crater and absence of flame shall be considered as evidences of detonation.

### § 73.54 Ammunition for cannon.

(a) Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shell must be well packed and properly secured in strong wooden or metal containers, or in linear high-density polyethylene containers designed in accordance with Department of the Army Ordnance Corps Dwg. XP115554 and Sketch No. 4, dated May 4, 1961.

(b) Each outside package must be plainly marked "AMMUNITION FOR CANNON WITH EXPLOSIVE PROJECTILES," "AMMUNITION FOR CANNON WITH GAS PROJECTILES" (see § 73.409 (a) (1) for required label), "AMMUNITION FOR CANNON WITH SMOKE PROJECTILES," "AMMUNITION FOR CANNON WITH INCENDIARY PROJECTILES," or "AMMUNITION FOR CANNON WITH ILLUMINATING PROJECTILES", as the case may be.

(c) Ammunition for cannon must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

### § 73.55 Ammunition, nonexplosive.

(a) Nonexplosive ammunition is defined as a device which contains no explosives or other dangerous articles, such as cartridge cases, dummy or drill cartridges; empty, sand loaded or solid projectiles with or without tracers (containing not in excess of one ounce of tracer composition), empty mines, empty bombs, solid projectiles, empty torpedoes,

or practice bombs. It also includes devices containing no explosives, or other dangerous articles, except installed electric squibs, primers, propellants or thermal batteries required for the activation of the device, provided that it has been proven by test that when initiated the full energy release is contained within the outside shipping container. Such ammunition is exempt from Parts 71–78 of this chapter. Rotating bands should be protected against deformation by method of packing or loading.

**§ 73.56 Ammunition, projectiles, grenades, bombs, mines, gas mines, and torpedoes.**

(a) Detonating fuzes, tracer fuzes, explosive or ignition devices, bouchons, or fuze parts with explosives contained therein, must not be assembled in explosive projectiles, grenades, explosive bombs, explosive mines, or explosive torpedoes, or included in the same outside package with them unless shipped by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government or unless of a type approved by the Bureau of Explosives.

(b) Explosive projectiles, explosive torpedoes, explosive mines, explosive bombs, or explosive grenades except as provided in paragraph (c) of this section, must be packed and properly secured in strong wooden or metal boxes.

(c) Explosive projectiles, explosive torpedoes, explosive mines, or explosive bombs, exceeding 90 pounds in weight, and explosive projectiles of not less than 4½ inches in diameter, may be shipped without being boxed only by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government when securely blocked and braced in accordance with methods approved by the Bureau of Explosives.

(1) Explosive projectiles less than 4½ inches in diameter may be shipped without being boxed, when palletized, only by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government when securely blocked and braced in accordance with methods approved by the Bureau of Explosives.

(d) Gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles, gas bombs, smoke bombs, incendiary bombs, gas grenades, smoke grenades, incendiary grenades, and gas mines, explosive, containing a bursting charge must be packed and properly secured in strong wooden boxes. Detonating fuzes, boosters or bursters, bouchons or ignition elements must not be assembled in these articles or included in the same package with them unless shipped by, for, or to the Departments of the Army, Navy, or Air Force of the United States Government or unless of a type approved by the Bureau of Explosives. (See §§ 73.190, 73.330, 73.350, and 73.383 for nonexplosive chemical or poisonous ammunition.)

(e) The gross weight of a box containing more than one projectile, mine, grenade, or bomb must not exceed 250 pounds.

(f) Each exterior package or projectile, bomb, or mine must be plainly marked "Explosive Projectile," "Explosive Torpedo," "Explosive Mine," "Explosive Bomb," "Hand Grenades," or "Rifle Grenades," as the case may be, except that each device need not be so marked when palletized and the palletized units are plainly marked and shipped as carload or truckload shipments.

(g) Ammunition for cannon with gas projectiles, and bombs, projectiles, grenades or other containers loaded with a poisonous gas or liquid, class A, and an explosive charge, either boxed or unboxed (see paragraph (c) of this section), must bear the white "Poison Gas" label.

(h) For regulations for shipping ammunition containing chemicals but no explosives or bursting charges, see chemical ammunition, §§ 73.330, 73.350, and 73.383.

(i) Articles described in paragraphs (a), (b), (c), (d) and (g) of this section must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

**§ 73.57 Rocket ammunition.**

(a) Rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, or illuminating projectiles must be well packed and properly secured in strong wooden or metal containers or in pre-formed fiber glass resin impregnated containers approved by the Bureau of Explosives.

(b) Each outside package must be plainly marked "ROCKET AMMUNITION WITH EXPLOSIVE PROJECTILES", "ROCKET AMMUNITION WITH GAS PROJECTILES" (see § 73.402 (a) (6) for required label), "ROCKET AMMUNITION WITH SMOKE PROJECTILES", "ROCKET AMMUNITION WITH INCENDIARY PROJECTILES", or "ROCKET AMMUNITION WITH ILLUMINATING PROJECTILES", as the case may be.

(c) Rocket ammunition must not be offered for transporation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

**§ 73.58 Ammunition for small arms.**

(a) Ammunition for small arms with explosive bullets and ammunition for small arms with explosive projectiles must be well packed and properly secured in strong wooden or metal containers. The gross weight of the outside package must not exceed 150 pounds.

(b) Each outside package must be plainly marked "AMMUNITION FOR SMALL ARMS WITH EXPLOSIVE BULLETS" or "AMMUNITION FOR SMALL ARMS WITH EXPLOSIVE PROJECTILES," as the case may be.

(c) Ammunition for small arms with explosive bullets or ammunition for small arms with explosive projectiles must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

**§ 73.59 Chemical ammunition, explosive.**

(a) When chemical elements of ammunition are shipped assembled with their detonating fuzes or bursting charges, they must be shipped in conformity with the regulations prescribed for explosive articles, class A, see § 73.56. For shipment of these articles not containing ignition elements, bursting charges, detonating fuzes, or other explosive components, see § 73.330, § 73.350, and § 73.383. For shipment of these articles assembled with their ignition elements or expelling charges but without any detonating or bursting charge see § 73.88 (d).

(b) Chemical ammunition, explosive must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

**§ 73.60 Black powder and low explosives.**

(a) Black powder and low explosives must be packed in containers complying with the following specifications:

(1) Spec. 10B (§ 78.156 of this chapter). Wooden barrels or kegs. Not over 200 pounds gross weight.

(2) Spec. 13 (§ 78.140 of this chapter). Metal kegs, not less than 7 inches long. Net weight not less than 6¼ pounds nor more than 150 pounds.

(3) Bundles of metal kegs, spec. 13 (§ 78.140 of this chapter), firmly tied together with rope and wrapped in strong burlap, canvas, or similar material, securely sewed and roped, authorized. Net weight of powder must not exceed 100 pounds.

(4) Spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes with inside containers which must be spec. 13 (§ 78.140 of this chapter), metal kegs, or fiber or metal containers not over 1½ pounds capacity each, or cotton bags of at least 4 ounce cotton duck not over 25 pounds capacity each. The gross weight of spec. 14 boxes not to exceed 140 pounds and the gross weight of spec. 15A or 16A boxes not to exceed 200 pounds.

(5) Spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes with inside cylindrical fiber cartridges not over 5 inches diameter nor over 18 inches long with fiber at least 0.05 inch thick paraffined on outer surface with joints securely glued or cemented, or strong paraffined paper cartridges not over 12 inches long authorized only for compressed pellets (cylindrical block) ⅞ inch or more in diameter. Boxes must be completely lined with strong paraffined paper or other suitable waterproofed material without joints or other openings at the bottom or sides. Authorized gross weight not to exceed 75 pounds.

(6) Spec. 12H, 23F, or 23H (§§ 78.209, 78.214, or 78.219 of this chapter). Fiberboard boxes with inside cylindrical fiber cartridges not over 5 inches diameter nor over 18 inches long with fiber at least 0.05 inch thick paraffined on outer surface with joints securely glued or cemented, or strong paraffined paper cartridges not over 12 inches long authorized only for compressed pellets (cylindrical block) ⅞ inch or more in diameter. Authorized gross weight not to exceed 65 pounds.

(b) Black powder (not low explosives) in addition to containers specified in paragraph (a) of this section, must be shipped in containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes with inside containers which must be cloth or paper bags of capacity not exceeding 25 pounds net weight, provided the completed shipping package shall be capable of standing a drop of 4 feet without rupture of inner or outer containers. The completed package must not exceed 50 pounds, net weight, of black powder.

(2) Spec. 12H, 23F, or 23H (§§ 78.209, 78.214, or 78.219 of this chapter). Fiberboard boxes with inside containers which must be cloth, paper, or securely closed polyethylene bags constructed of material not less than 0.004 inch thick of capacity not exceeding 25 pounds net weight for cloth or paper bags and not exceeding 50 pounds net weight for polyethylene bags, or inside fiber or metal containers having not over 1 pound capacity each, provided the completed shipping package shall be capable of withstanding a drop of 4 feet without rupture of inner or outer containers. The tubes of the box may be eliminated and a single tube as specified in spec. 23F (§ 78.214 of this chapter) may be substituted. The completed package shall not contain more than 50 pounds net weight of black powder.

(3) Spec. 17E (§ 78.116 of this chapter). Metal drums (single-trip), not over 5 gallons capacity each, without opening except bunghole not exceeding 2.3 inches in diameter. Authorized for carload or truckload shipments only.

(c) Black pellet powder primed with an electric squib secured inside the coaxial hole of the pellet powder with loose ends of the wires of the squib effectively short-circuited may be shipped in containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A (§§ 78.165, 78.168 or 78.185 of this chapter). Wooden boxes with inside cartridges which must be strong paraffined paper cartridges not over 12 inches long authorized only for compressed pellets (cylindrical block) ⅞ inch or more in diameter. Boxes must be lined as prescribed for cylindrical fiber cartridges. Gross weight not to exceed 65 pounds.

(d) Low explosives (not black powder) may in addition to the containers specified in paragraph (a) of this section, be shipped in containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes with inside containers which must be strong paper bags of capacity not exceeding 25 pounds. Gross weight of spec. 14 box must not exceed 140 pounds. Gross weight of spec. 15A or 16A box must not exceed 200 pounds.

(2) Spec. 12H, 23F, or 23H (§ 78.209, § 78.214, or § 78.219 of this chapter). Fiberboard boxes with inside containers which must be strong paper bags of capacity not exceeding 25 pounds. Gross weight must not exceed 65 pounds.

(3) Spec. 15A (§ 78.168 of this chapter). Wooden boxes, lined, spec. 2L (§ 78.30 of this chapter). Authorized only for low explosives in the form of hard nonplastic rods or cylinders not less than ⅝-inch diameter.

(e) Each outside package must be plainly marked, stamped, or stenciled "BLACK POWDER" or "LOW EXPLOSIVES," and may also show "BLASTING," "RIFLE," etc., as "BLACK BLASTING POWDER," "BLACK RIFLE POWDER," "LOW BLASTING EXPLOSIVE" or "BLACK PELLET POWDER," as the case may be.

(1) Inside containers of over 1½ pounds capacity each in boxes, must be packed with filling holes up, and the boxes must be marked on top "THIS SIDE UP."

(2) Additional marks, trade names, etc., may appear if desired, but such additional marking must not be more conspicuous than nor obscure the marking prescribed herein.

(f) Black powder and low explosives must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

**§ 73.61 High explosives.**

(a) High explosives (dynamite), except gelatin dynamite, when offered for transportation by rail freight or highway must not contain in excess of 60 percent of liquid explosive ingredient and when offered for transportation by carrier by water must not contain in excess of 75 percent of liquid explosive ingredient. Maximum limit of liquid explosive ingredient specified for transportation by carrier by water applies only for such explosives as consist principally of wood pulp or other satisfactory absorbent and liquid explosive, which are comparable with good commercial dynamite under tests as to leakage of liquid ingredient and sensitiveness to the shocks of transportation, and for shipments that are otherwise in compliance with the regulations in Parts 71–78 of this chapter, for the transportation of high explosives.

(b) High explosives consisting of a liquid mixed with an absorbent material must have the absorbent (wood pulp or similar material) in sufficient quantity and of satisfactory quality, properly dried at the time of mixing; nitrate of soda must be dried at the time of mixing to less than 1 percent of moisture; and the ingredients must be uniformly mixed so that the liquid will remain thoroughly absorbed under the most unfavorable conditions incident to transportation.

(c) High explosives containing nitroglycerin or other liquid explosive ingredients must have uniformly mixed with an absorbent material a satisfactory antacid, which must be in quantity sufficient to have the acid neutralizing power of an amount of magnesium carbonate equal to 1 percent of the nitroglycerin or other liquid explosive ingredient.

(d) Cartridges shall consist of a column of explosives completely inclosed in a shell made of strong paper or polyethylene or a combination of paper and polyethylene, so treated that it will not absorb the liquid ingredient of the explosive.

(e) Bags shall be made of strong paper or equally efficient material so treated or of such nature that it will not absorb the liquid ingredient of the explosive.

(f) All boxes in which high explosives are packed must be lined with strong paraffined paper or other suitable material, except as provided in paragraph (j) of this section, § 73.64 (a) (5), and § 73.65 (a) (5). Lining must be without joints or other openings or with cemented joints at the bottom, ends or sides of boxes, and for explosives with liquid ingredients must be impervious to such ingredient and also to water. Covers of boxes must be protected from contact with explosives by lining paper or other suitable material. (See spec. 2L (§ 78.30 of this chapter), for authorized lining material.)

(g) Before cartridges or bags of gelatin explosives are packed in boxes, lined in accordance with paragraph (f) of this section, dry fine wood pulp or sawdust at least ¼ inch in depth must be spread over the bottom of box or bottom of box may have a full area pad formed of absorptive cellulose sheet having nitroglycerin absorptive value equivalent to sawdust as specified; similar materials are required in boxes for packing all non-gelatinous types of explosives containing 30 percent or more liquid explosive ingredient.

(h) Except for cartridges containing gelatin dynamite, all cartridges of high explosives exceeding 4 inches in length and containing more than 10 percent of a liquid explosive ingredient must be placed horizontally in boxes. Bags must be packed with their filling holes up.

(i) Movement of cartridges and bags of high explosives within the boxes shall be prevented by sufficiently tight packing.

(j) High explosives (dynamite), except gelatin dynamite, packed in bags or in cartridges in excess of 2 inches in diameter and containing not more than 30 percent liquid explosive ingredients may be packed in outside containers without sawdust and without lining paper provided either each inside or outside container is sift-proof and is so treated as to prevent penetration by the commodity with which the container is filled for shipping.

**§ 73.62 High explosives, liquid.**

(a) Liquid explosives as defined in § 73.53(e) must be packed in specification containers as follows:

(1) Spec. 15L (§ 78.176 of this chapter). Wooden boxes which must be plainly marked on top and on one side or end "HIGH EXPLOSIVES—DANGEROUS" in letters not less than 7/16 inch in height. The tops of boxes must be marked "THIS SIDE UP".

(2) Spec. 15M (§ 78.177 of this chapter). Wooden boxes. Metal inside containers shall contain not more than 10 quarts liquid explosives each. Boxes must be plainly marked on top and on one side or end "HIGH EXPLOSIVES—DANGEROUS" in letters not less than 7/16 inch in height. The tops of boxes must be marked "THIS SIDE UP".

(3) Spec. MC–200 (§ 78.315 of this chapter). Motor vehicle container.

(b) High explosives, liquid, must not be offered for transportation by rail express, except as provided in § 73.86 and §75.675 of this chapter.

**§ 73.63 High explosive with liquid explosive ingredient.**

(a) High explosives (dynamite) containing not more than 30 percent liquid explosive ingredients must be prepared as prescribed in § 73.61, except as otherwise specified, and packed in containers complying with the following specifications:

(1) Spec. 23G (§ 78.218 of this chapter). Fiberboard boxes. Not more than one cartridge in each box. High explosives packed in boxes consisting of more than one tube joined circumferentially are exempt from the requirements of § 73.61 (f) and (g). High explosives packed in boxes consisting of one tube closed at the ends are exempt from the requirements of § 73.61 (d), (f), and (g). Gross weight of boxes not to exceed 65 pounds.

(2) Spec. 14, 15A, or 16A (§ 78.165, § 78.168, or § 78.185 of this chapter). Wooden boxes, or spec. 12H, 23F, or 23H (§ 78.209, § 78.214, or § 78.219 of this chapter) fiberboard boxes, with inside containers which must be cartridges not exceeding 12 inches in diameter or 50 pounds in weight with length not to exceed 36 inches, or bags not exceeding 50 pounds each securely closed so as to prevent leakage therefrom. Gross weight of wooden boxes not to exceed 75 pounds and gross weight of fiberboard boxes not to exceed 65 pounds.

(3) Spec. 23F or 23H (§ 78.214 or 78.219 of this chapter). Fiberboard boxes having one inside 26-gauge metal container, measuring not over 8 inches in diameter and 31 inches long, containing high explosives (ammonium dynamite core) surrounded by nitrocarbonitrate. Authorized gross weight not to exceed 65 pounds.

(b) High explosives (dynamite) containing 10 percent or less of a liquid explosive ingredient in cartridges or bags as prescribed in § 73.61 (d) and (e) may be packed in wooden boxes, spec. 14, 15A, or 16A (§ 78.165, § 78.168, or § 78.185 of this chapter), gross weight not to exceed 140 pounds, or fiberboard boxes, spec. 12H, 23F, or 23H (§ 78,209, § 78.214, or § 78.219 of this chapter), gross weight not to exceed 65 pounds.

(1) High explosives (dynamite) containing 10 percent or less of a liquid explosive ingredient may be packed in fiberboard boxes, spec. 23G (§ 78.218 of this chapter). Not more than one cartridge in each box. High explosives packed in boxes consisting of more than one tube joined circumferentially are exempt from the requirements of § 73.61 (f) and (g). High explosives packed in boxes consisting of one tube closed at the ends are exempt from the requirements of § 73.61 (d), (f), and (g). Gross weight of boxes not to exceed 65 pounds.

(c) High explosives (dynamite) containing more than 30 percent liquid explosive ingredients must be prepared as prescribed in § 73.61 (a) to (i), inclusive, except as otherwise specified, and in containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter) wooden boxes or spec. 12H, 23F, or 23H (§§ 78.209, 78.214, or 78.219 of this chapter) fiberboard boxes. Inside containers must consist of:

(i) Cartridges not exceeding 4 inches in diameter and not exceeding 8 inches in length.

(ii) Cartridges exceeding 4 inches in diameter and not exceeding 5 inches in diameter and between 8 inches and not exceeding 10 inches in length must be redipped in melted paraffin or equivalent material.

(iii) Two or more cartridges that must be redipped because of their size may be enclosed in another strong paper shell to form a completed cartridge not exceeding 30 inches in length. The resulting cartridge must be dipped in melted paraffin or equivalent material.

(iv) Gross weight of wooden boxes not to exceed 75 pounds and gross weight of fiberboard boxes not to exceed 65 pounds.

(2) Spec. 14, 15A, or 16A (§ 78.165, § 78.168, or § 78.185 of this chapter) wooden boxes, or spec. 12H, 23F, or 23H (§ 78.209, § 78.214, or § 78.219 of this chapter), fiberboard boxes, with inside containers which must be paraffined two-ply paper bags not exceeding 12½ pounds capacity, securely closed by folding the tops and securing the fold by tape, with not more than two such bags inserted into another two-ply paper bag which must be securely closed and dipped in paraffin after closing, or with not more than two inside containers which must be securely closed polyethylene bags not less than 0.004 inch in thickness of not more than 12½ pounds capacity each packed in a securely closed polyethylene or paper bag and packed in polyethylene lined outside fiberboard boxes. Gross weight of wooden boxes not to exceed 75 pounds and gross weight of fiberboard boxes not to exceed 65 pounds.

(d) High explosives (gelatin dynamite and blasting gelatin) must be prepared as prescribed in § 73.61 (a) to (i) inclusive, except as otherwise specified, and in containers complying with the following specifications:

(1) Spec. 23G (§ 78.218 of this chapter). Fiberboard boxes. Not more than one cartridge in each box. High explosives packed in boxes consisting of more than one tube joined circumferentially are exempt from the requirements of § 73.61 (f) and (g) or when packed in boxes consisting of one tube closed at the ends are exempt from the requirements of § 73.61 (d) to (g), inclusive. Gross weight of boxes not to exceed 65 pounds.

(2) Spec. 14, 15A, or 16A (§ 78.165, § 78.168, or § 78.185 of this chapter). Wooden boxes, or spec. 12H, 23F, or 23H (§ 78.209, § 78.214, or § 78.219 of this chapter), fiberboard boxes, with inside containers which must be cartridges not exceeding 12 inches in diameter or 50 pounds in weight with length not to exceed 36 inches, or bags not exceeding 12½ pounds each. Bags if not completely sealed against leakage by method of closure must be packed with filling holes up. Gross weight of wooden boxes not to exceed 75 pounds and gross weight of fiberboard boxes not to exceed 65 pounds.

(3) High explosives (gelatin dynamite or blasting gelatin) may be shipped in a package consisting of not more than 6 cartridges of such explosives, each not exceeding 32 inches in length or 5 inches in diameter, cartridged with heavy paper in such manner as to have the approximate strength of a spec. 23G (§ 78.218 of this chapter) container, which cartridges shall in turn be placed in a 10-ply paper tube not exceeding 11 feet in length. The outer paper tube must be equipped with a metal cone or equally efficient device on one end which shall serve to close that end of the tube and to the metal cone shall be affixed a wire threaded through fiber tubes running through the center of each of the 6 cartridges; or as an alternative to the single wire running through the cartridges in the outer tube at the center, two wires may be applied, one on each side of the cartridges and between the outside of the cartridges and the inside of the outer tube. In either event, cartridges and the outer tube shall be securely closed so as to prevent spilling of any loose explosive under any conditions normally incident to transportation and cartridges shall be so loaded and stayed within the car or motor vehicle as to prevent damage to individual containers. The total gross weight of each completed package shall not exceed 125 pounds. Shipments are authorized in carload or truckload lots only without transfer of packages other than such transfers as may be necessary in the event of mechanical failure of the car or vehicle in which originally loaded.

(e) High explosives (straight gelatin dynamites of 80 percent strength and over and blasting gelatin) must be packed in cartridges or in bulk in outside boxes. When packed in bulk in boxes double lining paper throughout must be used. Containers must comply with the following specifications:

(1) Spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes.

(2) Spec. 12H, 23F, 23G, or 23H (§ 78.209, § 78.214, § 78.218, or § 78.219 of this chapter). Fiberboard boxes. Spec. 23G must be packed in an outer container consisting of at least 7-ply heavy Kraft paper (see § 73.25 for additional required marking).

(3) Gross weight of wooden boxes not to exceed 75 pounds. Gross weight of fiberboard boxes not to exceed 65 pounds

(f) Boxes containing high explosives must be plainly marked on top and on one side or end, except those made in compliance with spec. 23G which must be marked on the side or end, and kegs, drums, or barrels containing high explosives must be marked on both ends "HIGH EXPLOSIVES—DANGEROUS" in letters not less than 7/16 inch in height. The tops of boxes except those made in compliance with spec. 23G, must be marked "THIS SIDE UP".

(g) High explosives with liquid explosive ingredient must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

**§ 73.64 High explosives with no liquid explosive ingredient and propellant explosives, class A.**

(a) High explosives containing no liquid explosive ingredients if their sensitiveness to percussion is not greater than that measured by the blow delivered by an 8-pound weight dropping from a distance of 7 inches on a compressed pellet of the explosive three-hundredths of an inch thick and two-tenths of an inch in diameter, confined rigidly between hard steel surfaces as as in the standard Impact Testing Apparatus of the Bureau of Explosives, must be packed in cartridges or in bags in outside boxes. They must be packed in cartridges when their sensitiveness is greater than the limit prescribed herein. Such explosives when dry may be packed in strong sift-proof cloth or paper bags of capacity not exceeding 25 pounds. These explosives must be packed in outside containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes.

(2) Spec. 12H, 23F, or 23H (§ 78.209, § 78.214, or § 78.219 of this chapter). Fiberboard boxes.

(3) Spec. 10B (§ 78.156 of this chapter). Wooden barrels or kegs.

(4) Gross weight of wooden boxes not to exceed 140 pounds. Gross weight of fiberboard boxes not to exceed 65 pounds.

(5) When such explosives contain over 5 percent moisture, boxes must be lined with strong paraffined paper or other authorized material, spec. 2L (§ 78.30 of this chapter).

(6) When such explosives are in combination cartridges, consisting of column of explosives with core of dynamite, they may be shipped when packed in outside boxes with 65 pounds as the maximum gross weight. The column of explosives must be completely inclosed in waterproofed cloth or strong waterproofed paper and must not exceed 6 inches in diameter, 20 inches in length, or gross weight of 25 pounds.

(7) Spec. 23G (§ 78.218 of this chapter). Fiberboard boxes. Such explosives when packed in boxes consisting of more than one tube joined circumferentially are exempt from requirements of § 73.61 (f) and (g) or when packed in boxes consisting of one tube closed at the ends are exempt from requirements of § 73.61 (d) to (g) inclusive. The gross weight of boxes not to exceed 65 pounds.

(b) Boxes containing high explosives must be plainly marked on top and on one side or end, except those made in compliance with spec. 23G which must be marked on the side or end, and kegs, drums, or barrels containing high explosives must be marked on both ends "HIGH EXPLOSIVES—DANGEROUS" in letters not less than 7/16 inch in height.

(c) High explosives with no liquid explosive ingredient must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

(d) Propellant explosives, class A must be packed in containers as prescribed in § 73.93. Each outside container must be plainly marked "PROPELLANT EXPLOSIVES, CLASS A".

**§ 73.65 High explosives with no liquid explosive ingredient nor any chlorate.**

(a) High explosives containing no liquid explosive ingredient nor any chlorate if their sensitiveness to percussion is not greater than that measured by the blow delivered by an 8-pound weight dropping from a distance of 7 inches on a compressed pellet of the explosive three-hundredths of an inch thick and two-tenths of an inch in diameter, confined rigidly between hard steel surfaces as in the standard Impact Testing Apparatus of the Bureau of Explosives, must be packed in cartridges, or in bags or metal containers in outside boxes, except that the requirement of packaging in cartridges, bags or metal containers does not apply to plastic-bonded explosives, but they must be packed and cushioned so as to prevent movement of individual pieces within the outside shipping container. They must be packed in cartridges when their sensitiveness is greater than the limit prescribed in this section. Such explosives when dry may be packed in strong sift-proof bags securely closed so as to prevent leakage therefrom or metal containers of capacity not exceeding 60 pounds. These explosives must be packed in outside containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes.

NOTE 1: Wooden boxes, having inside metal containers which are tightly and securely closed, may be equipped with hand holes in each end which must be not more than one inch by four inches and centered laterally not nearer than 1⅛ inches from top edge of end of box.

(2) Spec. 12H, 23F, or 23H (§ 78.209, § 78.214, or § 78.219 of this chapter). Fiberboard boxes.

(3) Spec. 10B (§ 78.156 of this chapter). Wooden barrels or kegs.

(4) Gross weight of wooden boxes not to exceed 140 pounds. Gross weight of fiberboard boxes not to exceed 65 pounds.

(5) When such explosives contain over 5 percent moisture, boxes must be lined with strong paraffined paper or other authorized material, spec. 2L (§ 78.30 of this chapter).

(6) When such explosives are in combination cartridges, consisting of column of explosives with core of dynamite, they may be shipped when packed in outside boxes with 65 pounds as the maximum gross weight. The column of explosives must be completely inclosed in waterproofed cloth or strong waterproofed paper and must not exceed 6 inches in diameter, 20 inches in length, or gross weight of 25 pounds.

(7) Spec. 23G (§ 78.218 of this chapter). Fiberboard boxes. Such explosives when packed in boxes consisting of more than one tube joined circumferentially are exempt from requirements of § 73.61 (f) and (g) or when packed in boxes consisting of one tube closed at the ends are exempt from requirements of § 73.61 (d) to (g) inclusive. The gross weight of boxes not to exceed 65 pounds.

(b) Amatol consisting of 80 percent ammonium nitrate and 20 percent trinitrotoluene, ammonium picrate, nitroguanidine, nitrourea, urea nitrate, picric acid, tetryl, trinitroresorcinol, trinitrotoluene, pentolite, cyclotrimethylenetrinitramine (desensitized), and soda amatol, in dry condition, in addition to containers prescribed in paragraphs (a) (1) to (5) and (7) of this section, may be shipped in containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes with strong paper or cloth bags of capacity not exceeding 50 pounds, packed with filling holes up.

(2) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Net weight not to exceed 200 pounds.

(c) Trinitrotoluene and pentolite, in dry condition, in addition to containers prescribed in paragraphs (a), (1) to (5) and (b) (1) and (2) of this section, may be shipped in specification containers as follows:

(1) Spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes with strong paper or cloth bags of capacity not exceeding 100 pounds, packed with filling holes up.

(2) Spec. 14, 15A, or 16A (§§ 78.165, 78.168 or 78.185 of this chapter). Wooden boxes with strong siftproof liners, spec. 2L (§ 78.30 of this chapter).

(d) The following materials may be shipped dry, in quantity not exceeding 4 ounces in one outside package for medicinal purposes or as reagents, by carriers by rail freight, rail express, highway, or water, as drugs, medicines, or chemicals, without other restrictions, when in securely closed bottles or jars properly cushioned to prevent breakage:

(1) Ammonium picrate.
(2) Dipicrylamine.
(3) Dipicryl sulfide.
(4) Dinitrophenylhydrazine.
(5) Nitroguanidine.
(6) Picramide.
(7) Picric acid.
(8) Picryl chloride.
(9) Trinitroanisole.
(10) Trinitrobenzene.
(11) Trinitrobenzoic acid.
(12) Trinitro-m-cresol.
(13) Trinitronaphthalene.
(14) Trinitroresorcinol.
(15) Trinitrotoluene.
(16) Urea nitrate.

(e) Ammonium picrate, picric acid, urea nitrate, trinitrobenzene, trinitroresorcinol, trinitrotoluene, cyclotrimethylenetrinitramine, and trinitrobenzoic acid when wet with not less than 10 pounds of water to each 90 pounds of dry material must be shipped in containers complying with the following specifications:

(1) Spec. 10B (§ 78.156 of this chapter). Wooden barrels or kegs. Not over 50 gallons nominal capacity.

(2) (See § 73.192 for shipments of wet ammonium picrate, wet picric acid, wet trinitrobenzoic acid, and wet urea nitrate not in excess of 16 ounces and § 73.193 for shipments of wet picric acid, wet trinitrobenzoic acid, and wet urea

nitrate not in excess of 25 pounds.) (See § 73.212 for shipments of wet trinitrobenzene and wet trinitrotoluene not in excess of 16 ounces.)

(3) Spec. 5B (§ 78.82 of this chapter) metal barrels or drums or Spec. 21C (§ 78.224 of this chapter) fiber drums. Authorized only for cyclotrimethylenetrinitramine wet with not less than 10 pounds of water to each 90 pounds of dry material in inside containers which must be bags made of at least 10-ounce cotton duck, rubber or rubberized cloth and securely closed. The dry weight of cyclotrimethylenetrinitramine in one metal barrel or drum must not exceed 300 pounds and not more than 225 pounds in fiber drums. These bags containing the cyclotrimethylenetrinitramine must then be placed in a rubber bag, rubberized cloth bag or bag made of suitable water-tight material which must be securely closed and then placed in the drum. If shipment of cyclotrimethylenetrinitramine is to take place at a time freezing weather is to be anticipated, it must be wet with a mixture of denatured ethyl alcohol or other suitable anti-freeze and water of such proportions that freezing will not occur in transit.

(f) Amatol when cast or pressed in a block or column, in addition to the containers prescribed in paragraphs (a) (1) to (5) and (7) of this section, may be shipped in specification containers as follows:

(1) Spec. 13A (§ 78.141 of this chapter). Metal drums not exceeding 90 pounds gross weight.

(g) Nitrocellulose must be packed in wooden boxes complying with specs. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter), with inside packages which must be:

(1) Inside packages containing not more than 1 pound each of dry, uncompressed nitrocellulose, wrapped in strong paraffined paper or suitable sparkproof material. Completed outside package not to contain more than 10 pounds dry nitrocellulose.

(2) Inside packages containing compressed sticks or blocks of dry nitrocellulose wrapped in strong paraffined paper. Gross weight not to exceed 75 pounds.

(h) Shaped charges, commercial, having exposed lined conical cavities must have such cavities effectively filled; those having conical cavities that are covered shall be paired together with the cavities facing each other and with one or more pairs in a fiber tube, or so arranged that the conical cavities of the shaped charges at the ends of the column face toward the center of the tube. The shaped charges in the fiber tubes must fit snugly with no excess space and the fiber tubes containing the shaped charges must be packed snugly with no excess space in the outside containers. Other methods of packaging for devices of which shaped charges are a component part may be employed when approved by the Bureau of Explosives. Shaped charges, commercial, must be packed in specification containers as follows:

(1) Spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes. Gross weight not to exceed 140 pounds.

(2) Spec. 12H, 23F, or 23H (§ 78.209, § 78.214, or § 78.219 of this chapter). Fiberboard boxes. Gross weight not to exceed 65 pounds.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes which must be manufactured of at least 275-pound strength (Mullen or Cady test) double-wall corrugated fiberboard and shall be provided with double-faced corrugated lining board (see § 78.205–15 of this chapter) having minimum strength (Mullen or Cady test) of 200 pounds. Individual charges of explosives shall be packed in inside securely closed, waterproof plastic containers, or in securely closed waterproof fiberboard containers having metal ends. Gross weight not to exceed 65 pounds. Inside individual containers shall be separated by means of double-faced corrugated fiberboard partitions of material not less than 175-pound Mullen or Cady test.

(i) Cyclotrimethylenetrinitramine (desensitized) in pellet form, dry, in addition to provisions of paragraphs (a) and (b) of this section may be packed in specification containers as follows:

(1) Spec. 15A (§ 78.168 of this chapter). Wooden boxes. For pellets ¼ inch or less in diameter; pellets must be packed in a slide-type fiber carton with perforated fillers. All openings of the fiber carton shall be securely closed with pressure-sensitive tape. Inside containers shall be cushioned with at least 2 inches of sawdust between inner containers and outside box. No inside container shall contain more than one-half pound net weight of explosive composition and not more than 10 pounds net weight of explosive composition shall be packed in one outside box.

(2) Spec. 15A (§ 78.168 of this chapter). Wooden boxes. For pellets exceeding ¼ inch in diameter; pellets must be packed in a fiber tube with positive closures at both ends, which shall be packed in a fiber carton having not more than one-half pound net weight of explosive composition. Fiber carton shall be cushioned with not less than 2 inches of sawdust in the outside box. Not more than 10 pounds net weight of explosive composition shall be packed in one outside box.

(j) Boxes containing high explosives must be plainly marked on top and on one side or end, except those made in compliance with spec. 23C (§ 78.218 of this chapter) which must be marked on the side or end, and kegs, drums, or barrels containing high explosives must be marked on both ends "HIGH EXPLOSIVES—DANGEROUS" in letters not less than 7/16 inch in height. When space will not permit such marking on ends of kegs or drums, it may be applied to the side of the container. The tops of boxes, except those referred to in paragraph (a) (1) to (7) of this section, must be marked "THIS SIDE UP".

(k) High explosives with no liquid explosive ingredient nor any chlorate must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

### § 73.66 Blasting caps, blasting caps with safety fuse, blasting caps with metal clad mild detonating fuse, and electric blasting caps.

(a) Blasting caps, blasting caps with safety fuse, blasting caps with metal clad mild detonating fuse, or electric blasting caps, in quantity of 1,000 or less, are classified as class C explosives. See § 73.103.

(b) The outside of all blasting caps and electric blasting caps must be free from fulminate or other explosive compositions.

(c) Blasting caps containing not to exceed 50 grains of explosive composition each must be placed in strong interior containers, in which they must fit snugly. When caps are loaded vertically in interior metal containers, they must be covered by suitable elastic material placed over the caps. Not more than 100 such blasting caps may be packed in a single container. All inside containers must then be packed snugly in cartons or wrappings made of paper or pasteboard.

(d) Not more than 5,000 blasting caps, not exceeding 50 grains of explosive composition each, packed in inner containers as prescribed in paragraph (c) of this section, must be packed in outside containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A (§ 78.165, § 78.168, or § 78.185 of this chapter). Wooden boxes (see § 73.67 (a) (1) Note 1) or spec. 12H, 23F, or 23H (§ 78.209, § 78.214, or § 78.219 of this chapter), fiberboard boxes, with inside containers which must be cartons or wrappings with inside containers as prescribed in paragraph (c) of this section, which must be separated from the outside box by at least one inch of tightly packed sawdust, excelsior, or equivalent cushioning material. Gross weight not to exceed 150 pounds.

NOTE 1: Because of the present emergency and until further order of the Commission, fiberboard boxes, spec. 23F (§ 78.214 of this chapter), may be used in lieu of prescribed wooden boxes, spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter).

(e) More than 5,000 blasting caps, not exceeding 50 grains of explosive composition each, packed in inner containers as prescribed in paragraph (c) of this section, must be packed in outside containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A (§ 78.165, § 78.168, or § 78.185 of this chapter). Wooden boxes (see § 73.67 (a) (1) Note 1) or spec. 12H, 23F, or 23H (§ 78.209, § 78.214, or § 78.219 of this chapter), fiberboard boxes, with inside containers which must be cartons or wrappings with inner containers as prescribed in paragraph (c) of this section, packed in an inside box made of sound lumber, a hermetically sealed metal box of metal not less than 30 gauge United States standard, or a sealed package made of 6-ply Sisalkraft Asphalt Laminated sheeting, or its equivalent; Asphalt Laminated sheeting shall consist of 2 plies of strong fibers, 2 plies of pliable asphalt, and 2 plies of protective cover.

The minimum tensile strength shall be 20 pounds per inch width in each direction. The laminated sheet shall have a minimum water resistance of 24 hours and a maximum water permeability of 4 grams per square meter per 24 hours. The inside wooden box, metal box, or sealed package must be separated at all points from the outside box by at least one inch of tightly packed sawdust, excelsior, or equivalent cushioning material. Gross weight not to exceed 150 pounds.

NOTE 1: Because of the present emergency and until further order of the Commission, fiberboard boxes, spec. 23F (§ 78.214 of this chapter), may be used in lieu of prescribed wooden boxes, spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter).

(2) More than 20,000 blasting caps containing not to exceed 50 grains of explosive composition each, must not be placed in one outside package.

(f) Blasting caps containing in excess of 50 grains of explosive composition each must be packed in containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A. (§§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes (see § 73.67 (a) (1), Note 1) with inside containers which must have strong interior containers, in which they must fit snugly. When caps are loaded vertically in interior metal containers, they must be covered by suitable elastic material placed over the caps. Not more than 10 such blasting caps may be packed in a single inside container. All inside containers must then be packed snugly in cartons or wrappings made of paper or pasteboard. The cartons or wrappings must be separated from outside box by at least 1 inch of tightly packed sawdust, excelsior, or equivalent cushioning material. Not more than 500 caps containing in excess of 50 grains of explosive composition each may be placed in one outside package. Gross weight not to exceed 150 pounds.

(g) Electric blasting caps must be packed in containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A (§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes (see § 73.67(a)(1), Note 1) or spec. 12H, 23F, or 23H (§ 78.209, 78.214, or 78.219 of this chapter) fiberboard boxes, with inside containers which must be pasteboard cartons containing not more than 100 caps each, or pasteboard tube inclosing each cap with wires or with the wires wrapped around the tube. Gross weight of wooden boxes containing pasteboard cartons or caps with wires 30 feet or more in length in pasteboard tubes must not exceed 150 pounds, except for export shipment. Gross weight of wooden boxes containing caps with wires less than 30 feet in length in pasteboard tubes must not exceed 75 pounds.

(h) Each outside container must be plainly marked "(number) BLASTING CAPS—HANDLE CAREFULLY", or "(number) ELECTRIC BLASTING CAPS—HANDLE CAREFULLY", as the case may be.

NOTE 1: The number of caps must be shown in the marking.

(i) Blasting caps and electric blasting caps must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

**§ 73.67 Blasting caps with safety fuse and blasting caps with metal clad mild detonating fuse.**

(a) Ten or less of the interior containers of not more than 100 blasting caps each, containing not to exceed 50 grains of explosive composition each, packed as prescribed in § 73.66(c), in the same outside container with safety fuse or metal clad mild detonating fuse, must be shipped in containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A (§ 78.165, § 78.168, or § 78.185 of this chapter). Wooden boxes (see Note 1 of this paragraph) or spec. 12H, 23F, or 23H (§ 78.209, § 78.214, or § 78.219 of this chapter), fiberboard boxes, with inside containers which must be cartons or wrappings with inner containers as prescribed in § 73.66 (c), placed in the center of a coil of fuse and secured and cushioned therein to prevent movement therefrom. Gross weight not to exceed 150 pounds.

NOTE 1: Closing of outside boxes by nailing tops in place with uncoated nails, at not over 3-inch centers into ends, and at not over 6-inch centers into sides, is authorized. Sizes of these nails must be not less than the following:

3-penny into ends and sides not over ⅜ inch thick.

4-penny into ends and sides over ⅜ but not over ½ inch thick.

5-penny into ends and sides over ½ but not over ⅝ inch thick.

6-penny into ends and sides over ⅝ but not over 13/16 inch thick.

7-penny into ends and sides over 13/16 inch thick.

(b) Each outside container must be plainly marked "(number) BLASTING CAPS WITH SAFETY FUSE—HANDLE CAREFULLY" or "(number) BLASTING CAPS WITH METAL CLAD MILD DETONATING FUSE—HANDLE CAREFULLY," as the case may be.

(c) Blasting caps with safety fuse and blasting caps with metal clad mild detonating fuse must not be offered for transportation by rail express, except as provided in §§ 73.86 and 75.675 of this chapter.

**§ 73.68 Detonating primers.**

(a) Detonating primers must be packed in containers complying with the following specifications:

(1) Spec. 14, 15A, or 16A (§ 78.165, § 78.168, or § 78.185 of this chapter). Wooden boxes (see § 73.67 (a) (1) Note 1) or spec. 12H, 23F, or 23H (§ 78.209, § 78.214, or § 78.219 of this chapter), fiberboard boxes, with inside containers which must be pasteboard cartons containing not more than 50 primers each, or pasteboard or plastic tube inclosing each primer with wires, or pasteboard, wooden, metal, or plastic tubes or spools with wires wrapped around the tube or spool. Gross weight of wooden boxes containing pasteboard cartons must not exceed 150 pounds, except for export shipment. Gross weight of wooden boxes containing pasteboard or plastic tube inclosing each primer with wires, or pasteboard, wooden, metal, or plastic tubes or spools with the wires wrapped around the tube or spool must not exceed 75 pounds.

(b) Each outside container must be plainly marked "DETONATING PRIMERS—HANDLE CAREFULLY".

(c) Detonating primers must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

**§ 73.69 Detonating fuzes, class A, with or without radioactive components, detonating fuze parts containing an explosive, boosters, bursters, or supplementary charges.**

(a) Detonating fuzes, class A with or without radioactive components, detonating fuze parts containing an explosive, boosters, bursters, or supplementary charges, when shipped not assembled in projectiles, bombs, etc., must be packed and well secured in strong, tight wooden or metal boxes.

NOTE 1: Radiation on the surface of any detonating fuze, class A, having a radioactive component shall not exceed 100 milliroentgens per hour and the radiation at the surface of the outside shipping container shall not exceed 200 milliroentgens per hour.

(b) The gross weight of one outside package containing detonating fuzes, class A, must not exceed 190 pounds. Boosters, bursters and supplementary charges, without detonators, when shipped separately, must not exceed a gross weight of 300 pounds.

(c) Each outside package must be plainly marked "DETONATING FUZES CLASS A EXPLOSIVES—HANDLE CAREFULLY—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVES," or "DETONATING FUZES, CLASS A EXPLOSIVES, RADIOACTIVE—HANDLE CAREFULLY—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVES," or "BOOSTERS (EXPLOSIVE)—HANDLE CAREFULLY," or "BURSTERS (EXPLOSIVE)—HANDLE CAREFULLY," or "SUPPLEMENTARY CHARGES (EXPLOSIVE)—HANDLE CAREFULLY," as the case may be.

(d) Detonating fuzes, class A, boosters, bursters, or supplementary charges must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

**§ 73.70 Diazodinitrophenol or lead mononitroresorcinate.**

(a) The offering of diazodinitrophenol or lead mononitroresorcinate in a dry condition for transportation by common carriers by rail freight, rail express, highway, or water is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders, the transportation of which is authorized in this part.

(b) Diazodinitrophenol or lead mononitroresorcinate must be packed wet with not less than 40 percent by weight of water in specification containers 5 or 5B (§ 78.80 or § 78.82 of this chapter) metal barrels or drums or 10B (§ 78.156 of this chapter) wooden barrels or kegs, with inside containers which must be bags made of at least 10-ounce cotton duck, rubber, or rubberized cloth, which

must be securely closed. The dry weight of diazodinitrophenol in one container must not exceed 220 pounds and the dry weight of lead mononitroresorcinate in one container must not exceed 100 pounds. The bags containing diazodinitrophenol or lead mononitroresorcinate must be placed in a rubber bag, rubberized cloth bag, or bag made of suitable watertight material and then placed in the barrel, keg, or drum. Any empty space in the outside bag must be filled with water and this bag securely closed.

(1) Spec. 21C (§ 78.224 of this chapter). Fiber drums not over 30 gallons capacity of at least nine-ply construction having, in addition, a sheet of steel having a minimum base box of 75 pounds, not less than .008 inch thick, wound between the fifth and sixth plies. The inside ply of kraft paper shall be laminated on each side with polyethylene to form a waterproof lining. The bottom head shall be of fiber, metal covered on the outside. Lead mononitroresorcinate only must be packed wet with not less than 40 percent by weight of water and shall be contained in at least two tightly sealed polyethylene bags of at least 0.004 inch thickness and this unit shall then be placed in a tightly closed polyethylene bag of at least 0.004 inch thickness and this assembly shall be placed within a 0.006 inch thickness polyethylene or other suitable plastic bag, completely filled with water and tightly closed. The 0.006 inch plastic bag shall be of such size as to completely fill the outside shipping container. The dry weight of lead mononitroresorcinate only in one outside container must not exceed 100 pounds.

(c) Sufficient outage in outside container must be allowed to prevent rupturing of container in freezing weather, or a mixture of denatured alcohol and water may be used to prevent freezing in transit.

(d) Each barrel, box, drum, or keg must be plainly marked "Initiating Explosive—Dangerous—Do Not Store or Load With Any High Explosive."

(e) Diazodinitrophenol or lead mononitroresorcinate, wet, must not be offered for transportation by rail express, except as provided in §§ 73.86 and 75.675 of this chapter.

### § 73.71 Fulminate of mercury.

(a) The offering of fulminate of mercury in a dry condition for transportation by common carriers by rail freight, rail express, highway, or water is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders, the transportation of which is authorized in this part.

(b) Fulminate of mercury must be packed wet with not less than 25 percent by weight of water in specification containers 5 or 5B (§§ 78.80 or 78.82 of this chapter) metal barrels or drums, 17H (§ 78.118 of this chapter) metal drums (single-trip), or 10B (§78.156 of this chapter), wooden barrels or kegs, with inside container which must be a bag made of 4-ounce duck. Inside the bag and over the fulminate there must be placed a cap of the same fabric, of the same diameter as the bag. The bag must be securely tied and placed in a strong grain bag. This grain bag must also be securely tied. The dry weight of fulminate in one container must not exceed 150 pounds. The bag and contents must be packed in the center of the wooden barrel or keg, metal barrel or drum, and must be entirely surrounded by not less than 3 inches of well-packed sawdust saturated with water. The wooden barrel or keg, or metal barrel or drum, must be lined with a heavy, close-fitting, jute bag closed by secure sewing to prevent escape of sawdust. The barrel, keg, or drum must be inspected carefully and all leaks stopped.

(c) If shipment of fulminate is to take place at a time that freezing weather is to be anticipated, a mixture of denatured ethly alcohol and water of such proportions that freezing will not occur in transit must be used.

(d) Each barrel, keg or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE".

(e) Fulminate of mercury, wet, must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

### § 73.72 Guanyl nitrosamino guanylidene hydrazine.

(a) The offering of guanyl nitrosamino guanylidene hydrazine in a dry condition for transportation by common carriers by rail freight, rail express, highway, or water is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders, the transportation of which is authorized in this part.

(b) Guanyl nitrosamino guanylidene hydrazine must be packed wet with not less than 30 percent by weight of water in specification containers 5 or 5B (§§ 78.80 or 78.82 of this chapter) metal barrels or drums, 17H (§ 78.118 of this chapter) metal drums (single-trip), or 10B (§ 78.156 of this chapter) wooden barrels or kegs, with inside container which must be a bag made of 4-ounce duck. Inside the bag and over the guanyl nitrosamino guanylidene hydrazine there must be placed a cap of the same fabric, of the same diameter as the bag. The bag must be securely tied and placed in a strong grain bag. This grain bag must also be securely tied. The dry weight of guanyl nitrosamino guanylidene hydrazine in one container must not exceed 75 pounds. The bag and contents must be packed in the center of the wooden barrel or keg, metal barrel or drum, and must be entirely surrounded by not less than 3 inches of well-packed sawdust saturated with water. The wooden barrel or keg, or metal barrel or drum, must be lined with a heavy, close-fitting, jute bag closed by secure sewing to prevent escape of sawdust. The barrel, keg, or drum must be inspected carefully and all leaks stopped.

(c) If shipment of guanyl nitrosamino guanylidene hydrazine is to take place at a time that freezing weather is to be anticipated, a mixture of denatured ethyl alcohol and water of such proportions that freezing will not occur in transit must be used.

(d) Each barrel, keg, or drum must be plainly marked "INITIATING EXPLOSIVE — DANGEROUS — DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE".

(e) Guanyl nitrosamino guanylidene hydrazine, wet, must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

### § 73.73 Lead azide.

(a) The offering of lead azide in a dry condition for transportation by common carriers by rail freight, rail express, highway, or water is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders, the transportation of which is authorized in this part.

(b) Lead azide, dextrinated type, or otherwise prepared to effectively control grain size, must be packed wet with not less than 20 percent by weight of water in specification containers 5 or 5B (§§ 78.80 or 78.82 of this chapter) metal barrels or drums, 17H (§78.118 of this chapter) metal drums (single-trip), or 10B (§ 78.156 of this chapter) wooden barrels or kegs, with inside container which must be a bag made of 4-ounce duck. Inside the bag and over the lead azide there must be placed a cap of the same fabric, of the same diameter as the bag. The bag must be securely tied and placed in a strong grain bag. This grain bag must also be securely tied. The dry weight of lead azide in one container must not exceed 150 pounds. The bag and contents must be packed in the center of the wooden barrel or keg, metal barrel or drum, and must be entirely surrounded by not less than 3 inches of well-packed sawdust saturated with water. The wooden barrel or keg, or metal barrel or drum, must be lined with a heavy, close-fitting, jute bag closed by secure sewing to prevent escape of sawdust. The barrel, keg, or drum must be inspected carefully and all leaks stopped.

(c) If shipment of lead azide is to take place at a time that freezing weather is to be anticipated, a mixture of denatured ethyl alcohol or other suitable antifreeze and water of such proportions that freezing will not occur in transit must be used.

(d) Each barrel, keg, or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE".

(e) Lead azide, wet, must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

### § 73.74 Lead styphnate.

(a) The offering of lead styphnate (lead trinitroresorcinate) in a dry condition for transportation by common carriers by rail freight, rail express, highway, or water is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders, the transportation of which is authorized in this part.

(b) Lead styphnate (lead trinitroresorcinate) must be packed wet with not less than 20 percent by weight of water in specification containers 5 or 5B (§§ 78.80 or 78.82 of this chapter) metal barrels or drums, 17H (§ 78.118 of this chapter) metal drums (single-trip), or 10B (§ 78.156 of this chapter), wooden barrels or kegs, with inside container which must be a bag made of rubber cloth. The lead styphnate within this bag should be divided into a number of smaller packages. There must be a cap of the same fabric and of the same diameter as the bag over the lead styphnate and inside the bag. The dry weight of lead styphnate in one outer container must not exceed 150 pounds. The bag and contents must be packed in the center of the wooden barrel or keg, metal barrel or drum, and must be entirely surrounded by not less than 3 inches of well-packed sawdust saturated with water. The wooden barrel or keg, or metal barrel or drum, must be lined with a heavy, close-fitting, jute bag closed by secure sewing to prevent escape of sawdust. The barrel, keg, or drum must be inspected carefully and all leaks stopped.

(c) If shipment of lead styphnate is to take place at a time freezing weather is to be anticipated, it must be wet with a mixture of denatured ethyl alcohol and water of such proportions that freezing will not occur in transit.

(d) Each barrel, keg, or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE".

(e) Lead styphnate (lead trinitroresorcinate), wet, must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

### § 73.75 Nitro mannite.

(a) The offering of nitro mannite in a dry condition for transportation by common carriers by rail freight, rail express, highway, or water, is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders, the transportation of which is authorized in this part.

(b) Nitro mannite must be packed wet with not less than 40 percent by weight of water in specification containers 5 or 5B (§ 78.80 or § 78.82 of this chapter) metal barrels or drums, or 10B (§ 78.156 of this chapter) wooden barrels or kegs, with inside containers which must be bags made of at least 10-ounce cotton duck, rubber or rubberized cloth, which must be securely closed. The dry weight of nitro mannite in one container must not exceed 100 pounds. These bags containing the nitro mannite must then be placed in a rubber bag, rubberized cloth bag or bag made of suitable watertight material and then placed in the barrel, keg, or drum. Any empty space in the outside bag must be filled with water and this bag securely closed.

(1) Spec. 21C (§ 78.224 of this chapter). Fiber drums not over 30 gallons capacity of at least nine-ply construction having, in addition, a sheet of steel having a minimum base box of 75 pounds, not less than 0.008 inch thick, wound between the fifth and sixth plies. The inside ply of kraft paper shall be laminated on each side with polyethylene to form a waterproof lining. The bottom head shall be of fiber, metal covered on the outside. Nitro mannite must be packed wet with not less than 40 percent by weight of water and shall be contained in at least two tightly sealed polyethylene bags of at least 0.004 inch thickness and this unit shall then be placed in a tightly closed polyethylene bag of at least 0.004 inch thickness and this assembly shall be placed within a 0.006 inch thickness polyethylene or other suitable plastic bag, completely filled with water and tightly closed. The 0.006 inch plastic bag shall be of such size as to completely fill the outside shipping container. The dry weight of nitro mannite in one outside container must not exceed 100 pounds.

(c) Sufficient outage in outside container must be allowed to prevent rupturing of container in freezing weather, or a mixture of denatured ethyl alcohol and water may be used to prevent freezing in transit.

(d) Each barrel, keg, or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE".

(e) Nitro mannite, wet, must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

### § 73.76 Nitrosoguanidine.

(a) The offering of nitrosoguanidine in a dry condition for transportation by common carriers by rail freight, rail express, highway, or water is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders, the transportation of which is authorized in this part.

(b) Nitrosoguanidine must be packed wet with not less than 10 percent by weight of water in specification containers 5 or 5B (§§ 78.80 or 78.82 of this chapter) metal barrels or drums, 17H (§ 78.118 of this chapter) metal drums (single-trip), or 10B (§ 78.156 of this chapter) wooden barrels or kegs, with inside container which must be a bag made of strong cloth, which must in turn be placed in the wooden barrel, or keg, or metal barrel or drum. The dry weight of nitrosoguanidine in one container must not exceed 75 pounds.

(c) Each barrel, keg, or drum must be plainly marked "INITIATING EXPLOSIVE — DANGEROUS — DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE".

(d) Nitrosoguanidine, wet, must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

### § 73.77 Pentaerythrite tetranitrate.

(a) The offering of pentaerythrite tetranitrate in a dry condition for transportation by common carriers by rail freight, rail express, highway or water is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders, the transportation of which is authorized in this part.

(b) Pentaerythrite tetranitrate must be packed wet with not less than 40 percent by weight of water in specification containers 5 or 5B (§ 78.80 or § 78.82 of this chapter) metal barrels or drums, 17H (§ 78.118 of this chapter) metal drums (single-trip), or 10B (§ 78.156 of this chapter) wooden barrels or kegs, with inside containers which must be bags made of at least 10-ounce cotton duck, rubber, or rubberized cloth, which must be securely closed. The dry weight of pentaerythrite tetranitrate in one container must not exceed 300 pounds. These bags containing the pentaerythrite tetranitrate must then be placed in a rubber bag, rubberized cloth bag, or bag made of suitable watertight material and then placed in the barrel, keg, or drum. Any empty space in the outside bag must be filled with water and this bag securely closed.

(c) Sufficient outage in outside container must be allowed to prevent rupturing of container in freezing weather, or a mixture of denatured ethyl alcohol or other suitable anti-freeze and water may be used to prevent freezing in transit.

(d) Each barrel, keg, or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE".

(e) Pentaerythrite tetranitrate, wet, must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

### § 73.78 Tetrazene.

(a) The offering of tetrazene (guanyl nitrosamino guanyl tetrazene) in a dry condition for transportation by common carriers by rail freight, rail express, highway, or water is forbidden, except as a component of manufactured articles such as percussion caps, detonators, blasting caps, and exploders, the transportation of which is authorized in this part.

(b) Tetrazene (guanyl nitrosamino guanyl tetrazene) must be packed wet with not less than 30 percent by weight of water in specification containers 5 or 5B (§§ 78.80 or 78.82 of this chapter) metal barrels or drums, 17H (§ 78.118 of this chapter) metal drums (single-trip), or 10B (§ 78.156 of this chapter) wooden barrels or kegs, with inside container which must be a bag made of 4-ounce duck. Inside the bag and over the tetrazene there must be placed a cap of the same fabric, of the same diameter as the bag. The bag must be securely tied and placed in a strong grain bag. This grain bag must also be securely tied. The dry weight of tetrazene in one container must not exceed 75 pounds. The bag and contents must be packed in the center of the wooden barrel or keg, metal barrel or drum, and must be entirely surrounded by not less than 3 inches of well-packed sawdust saturated with water. The wooden barrel or keg, or metal barrel or drum, must be lined with a heavy, close-fitting, jute bag closed by secure sewing to prevent escape of sawdust. The bar-

rel, keg, or drum must be inspected carefully and all leaks stopped.

(c) If the shipment of tetrazene is to take place at a time that freezing weather is to be anticipated, it must be wet with a mixture of denatured ethyl alcohol and water of such proportions that freezing will not occur in transit.

(d) Each barrel, keg, or drum must be plainly marked "INITIATING EXPLOSIVE—DANGEROUS—DO NOT STORE OR LOAD WITH ANY HIGH EXPLOSIVE".

(e) Tetrazene (guanyl nitrosamino guanyl tetrazene), wet, must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

**§ 73.79 Jet thrust units (jato), explosive, class A or igniters jet thrust (jato), explosive, class A.**

(a) Jet thrust units (jato), explosive, must not be shipped with igniters assembled therein unless shipped by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government. Jet thrust units (jato) or igniters jet thrust (jato) must be packed in outside containers complying with the following specifications:

(1) Spec. 14, 15A, 15E, or 16A (§§ 78.165, 78.168, 78.172 and 78.185 of this chapter), wooden boxes or wooden boxes, fiberboard lined.

(b) Jet thrust units (jato), class A, or igniters, jet thrust (jato), class A, packed in any other manner must be approved by the Bureau of Explosives.

(c) Each outside package must be plainly marked "JET THRUST UNITS, CLASS A EXPLOSIVES" or "IGNITERS, JET THRUST, CLASS A EXPLOSIVES."

(d) Jet thrust units, class A, or igniters, jet thrust, class A, must not be offered for transportation by rail express, except as provided in § 73.86 or § 75.675 of this chapter.

**§ 73.80 Charged oil well jet perforating guns.**

(a) Charged oil well jet perforating guns, when transported by motor vehicles operated by private carriers engaged in oil well operations in which the total weight of the explosive contents of shaped charges assembled to guns being transported does not exceed 20 pounds per such vehicle, are classed as class C explosives. See § 73.110.

(b) Charged oil well jet perforating guns of the steel tube type must be packed without blasting caps, electric blasting caps, or other firing devices affixed to or installed in the guns and transported in specially constructed bodies of motor vehicles operated by private carriers engaged in oil well operations whose motor vehicles transporting such guns must have specially built racks or carrying cases designed and constructed so that the guns are held securely in place during transportation and are not subject to damage by contact, one to the other or other articles or materials carried on the vehicle. Shaped charges assembled in the steel tubes must be of the type described in § 73.53(h)(1), except that each shaped charge shall contain not over 4 ounces of high explosive and each shaped charge if not completely enclosed in glass or metal must be fully protected by a metal cover after installation in the gun.

(c) Charged oil well jet perforating guns of the metallic strip or tubular framework type must be packed without blasting caps, electric blasting caps, or other firing devices affixed to or installed in the guns and transported in specially constructed bodies of motor vehicles operated by private carriers engaged in oil well operations whose motor vehicles transporting such guns must have specially built racks or carrying cases designed and constructed so that the guns are held securely in place during transportation and are not subject to damage by contact, one to the other or other articles or materials carried on the vehicle. Shaped charges assembled in the metallic strips or tubular framework must be of the type described in § 73.53(h)(1), except that each shaped charge shall contain not over 4 ounces of high explosive and each shaped charge if not completely enclosed in glass or metal must be fully protected by a metal cover after installation in the gun.

(d) The charged oil well jet perforating guns described in paragraphs (b) and (c) of this section and the bodies of motor vehicles transporting such guns must be so designed and constructed so that the guns are held securely in place during transportation and are not subject to damage by contact, one to the other or other articles or materials carried on the vehicle. The assembled gun or guns packed as required by paragraphs (b) or (c) of this section must not extend beyond the body of the vehicle and must be secured in the body of the motor vehicle in a fixed position so as to prevent movement relative to each other or in the body of the motor vehicle.

(e) Blasting caps, electric blasting caps, or other firing devices transported on any motor vehicle operated by private carriers engaged in oil well operations transporting charged oil well jet perforating guns shall be segregated; each kind from every other kind, and from jet perforating guns, tools or other supplies. Blasting caps, electric blasting caps, or other firing devices shall be carried in a container having individual pockets for each such device or in a fully enclosed steel container lined with nonsparking material. No more than two blasting caps, electric blasting caps, or other firing devices per gun shall be transported on the same motor vehicle transporting oil well jet perforating guns.

(f) Charged oil well jet perforating guns must not be offered for transportation or transported by carriers by rail freight, rail express, rail baggage, water, or by common or contract carriers by public highway.

**§ 73.86 Samples of explosives and explosive articles.**

(a) New explosives, including fireworks and explosive devices, other than Army, Navy, or Air Force explosive or chemical ammunition of a security classification, must be examined and approved by the Bureau of Explosives as safe for transportation before being offered for shipment, except that a sample of such explosives, fireworks, and explosive devices, not to exceed 5 pounds net weight, may be offered for transportation by carriers by rail freight, highway, or water for this examination. Samples of explosives, except liquid nitroglycerin, other than new explosives for laboratory examination not exceeding 5 pounds net weight, may be offered for transportation by carriers by rail freight, highway, or water. For the purpose of Parts 71–78 of this chapter, a new explosive, including fireworks and explosive devices, is the product of a new factory or an explosive or explosive device of an essentially new composition or character made by any factory.

(b) Before being offered for shipment, explosive articles in the experimental state must be made safe by removal of ignition elements or otherwise.

(c) Shipments of samples of explosives, fireworks and explosive devices must be packed, marked, and described as required by this part for the explosive contained therein.

(d) *Samples of explosives and explosive articles for transportation by rail freight, rail express, or highway.* Samples of explosives (except liquid nitroglycerin), including fireworks and explosive devices for examination in a laboratory only and not intended for use or demonstration, may be offered for transportation by rail freight, rail express, or highway provided they fulfill the following requirements:

(1) Samples of explosives including fireworks and explosive devices for laboratory examination must be packed in well-secured metal cans, glass bottles, rubber containers, or compatible plastic containers not subject to static generation by contained products, or in strong water-proof paper or cardboard packages; each sample must consist of not more than one-half pound of explosive, and the interior package must be placed in sawdust or similar cushioning material, at least 2 inches thick, in a wooden box, spec. 14 or 15A (§ 78.165 or 78.168 of this chapter).

(2) Whenever these samples of explosives for laboratory examination are contained in a metal envelope or receptacle, this receptable must be properly cushioned with sawdust or similar cushioning material in a strong wooden box, and this interior box must be packed in a wooden box, spec. 14 or 15A (§§ 78.165 or 78.168 of this chapter), with at least 2 inches of cushioning material separating the boxes.

(3) Not more than 100 blasting caps may be shipped in one outside package for laboratory examination, and they must be packed and cushioned as provided in paragraph (d) (2) of this section.

(4) Not more than 20 half-pound samples of explosives for laboratory examination may be packed in one outside package or transported in a single car or vehicle at one time.

(5) The net weight of the explosive contents must be plainly marked by the shipper on the outside of each box offered for transportation.

(6) *Label.* Each outside package containing samples of explosives for laboratory examination must have securely and

conspicuously attached to it a square red label as described in § 73.411.

**§ 73.87 Explosives in mixed packing.**

(a) Unless specifically authorized by Parts 71–78 of this chapter, explosives must not be packed in the same outside package with each other or with other articles. Explosives, except blasting caps and other initiating explosives, in separate interior containers, may be shipped when packed in the same outside package of gross weight not exceeding 50 pounds, provided the weight of any interior package of explosives does not exceed 8 ounces, and provided the interior packages are so cushioned and protected as to insure their transportation without rupture or leakage of contents. The package must be marked and described with the name of the most dangerous explosive included such as "HIGH EXPLOSIVE", or "BLACK POWDER".

CLASS B EXPLOSIVES; DEFINITIONS

**§ 73.88 Definition of class B explosives.**

(a) Explosives, class B, are defined as those explosives which in general function by rapid combustion rather than detonation and include some explosive devices such as special fireworks, flash powders, some pyrotechnic signal devices and liquid or solid propellant explosives which include some smokeless powders. These explosives are further specifically described in paragraphs (b) to (g) of this section.

(b) Ammunition for cannon with empty projectiles, inert-loaded projectiles, solid projectiles or without projectiles, or shell, and catapult charges exceeding 2 inches in diameter, is fixed ammunition assembled in a unit consisting of the cartridge case containing the propelling charge and primer with empty, inert-loaded, or solid projectiles, or without projectiles, which is fired from a cannon, mortar, gun, howitzer or recoilless rifle.

(c) Rocket ammunition is fixed ammunition which is fired from a tube, launcher, rails, trough, or other device as distinguished from cannon ammunition which is fired from a cannon, gun, or mortar. It consists of an igniter and propelling charge, commonly described as a motor, and empty projectile, inert-loaded projectile or solid projectile, or without projectile.

(d) Special fireworks are manufactured articles designed primarily for the purpose of producing visible or audible pyrotechnic effects by combustion or explosion. (See § 73.100 (r) for common fireworks.) Examples are toy torpedoes, railway torpedoes, some firecrackers and salutes, exhibition display pieces, aeroplane flares, illuminating projectiles, incendiary projectiles, incendiary bombs or incendiary grenades and smoke projectiles or smoke bombs fuzed or unfuzed and containing expelling charges but without bursting charges, flash powders in inner units not exceeding 2 ounces each, flash sheets in interior packages, flash powder or spreader cartridges containing not over 72 grains of flash powder each (see § 73.60 for shipments made as low explosives) and flash cartridges consisting of a paper cartridge shell, small-arms primer, and flash composition, not exceeding 180 grains all assembled in one piece. Fireworks must be in a finished state, exclusive of mere ornamentation, as supplied to the retail trade and must be so constructed and packed that loose pyrotechnic composition will not be present in packages in transportation.

(e) Jet thrust units (jato), class B, are metal cylinders containing a mixture of chemicals capable of burning rapidly and producing considerable pressure. Jet thrust units are designed to be ignited by an electric igniter. They are used to assist aeroplanes to take off, to propel large missiles, and to drive moving targets for practice firing.

(1) Igniters, jet thrust (jato), class B, are devices consisting of an electrically operated or remotely controlled igniting element and a fastburning composition assembled in a unit for use in igniting the propelling charge of jet thrust units.

(2) Starter cartridges, jet engine, consist of plastic and/or rubber cases, each containing a pressed cylindrical block of propellant explosive and having in the top of the case a small plastic compartment that encloses an electric squib, small amounts of black powder, and smokeless powder, which constitute an igniter. The starter cartridge is used to activate a mechanical starter for jet engines.

(f) *Propellant explosives, class B.* Propellant explosives, class B, are solid or liquid chemicals or chemical mixtures which function by combustion. The combustion is controlled by composition, size, form of grain, or other chemical or mechanical means. Any propellant is class B which fails to detonate in five trials when tested (see Note 2) in the package in which it is offered for shipment. Propellant explosives, class B, include smokeless powder for small arms (see Note 4), smokeless powder for cannon, liquid monopropellant fuel (see Note 3), smokeless lowder, or solid propellant explosives for rockets, jet thrust units, or other devices. Black powder is not included in this classification and is defined specifically in § 73.53.

(g) Explosive power devices, class B, are devices designed to operate ejecting apparatus or other mechanisms by means of a propellant explosive, class B, and differ from explosive power devices, class C, in that they contain larger or more powerful propellants. The devices must not rupture on functioning and must be of a type approved by the Bureau of Explosives, except as otherwise provided in §§ 73.51(q) and 73.86(a).

NOTE 1. Fire-extinguisher charges containing not to exceed 50 grains of propellant explosives per unit are exempt from the regulations in Parts 71–78 of this chapter.

NOTE 2: In conducting the test, one propellant container shall be surrounded by inert loaded containers of the same weight, including one inert container placed on top of the propellant container. The propellant shall be ignited by means of a commercial electric squib placed within 4 inches of the bottom of the container. The presence of a crater and absence of flame shall be considered as evidences of detonation.

NOTE 3: A liquid monopropellant fuel is defined as any propellant in which the fuel and the oxidizer are physically or chemically combined in one form.

NOTE 4: Smokeless powder for small arms in quantities not exceeding 100 pounds net weight in one car or motor vehicle, except shipments by, for, or to the Department of the Army, Navy, or Air Force of the United States Government, shall be classed as a flammable solid for purposes of transportation when packaged in accordance with § 73.197a.

**§ 73.89 Ammunition for cannon with empty projectiles, inert-loaded projectiles, solid projectiles, or without projectiles or shell.**

(a) Ammunition for cannon with empty projectiles, inert-loaded projectiles, solid projectiles, or without projectiles or shell, must be well packed and properly secured in strong wooden or metal containers.

(b) Each outside package must be plainly marked "AMMUNITION FOR CANNON WITH EMPTY PROJECTILES", "AMMUNITION FOR CANNON WITH INERT-LOADED PROJECTILES", "AMMUNITION FOR CANNON WITH SOLID PROJECTILES", or "AMMUNITION FOR CANNON WITHOUT PROJECTILES", as the case may be.

(c) Ammunition for cannon with empty projectiles, inert-loaded projectiles, solid projectiles, or without projectiles or shell, must not be offered for transportation by rail express, except as provided in § 73.86 and § 75.675 of this chapter.

**§ 73.90 Rocket ammunition with empty projectiles, inert-loaded or solid projectiles or without projectiles.**

(a) Rocket ammunition with empty projectiles, inert-loaded or solid projectiles or without projectiles must be well packed and properly secured in strong wooden or metal containers.

(b) Each outside package must be plainly marked "ROCKET AMMUNITION WITH EMPTY PROJECTILES", "ROCKET AMMUNITION WITH INERT-LOADED PROJECTILES", "ROCKET AMMUNITION WITH SOLID PROJECTILES", or "ROCKET AMMUNITION WITHOUT PROJECTILES", as the case may be.

(c) Articles as defined in § 73.88 (c) must not be offered for transportation by rail express, except as provided in §§ 73.86 and 75.675 of this chapter.

**§ 73.91 Special fireworks.**

(a) Special fireworks, except as otherwise authorized, must be securely packed in containers complying with the following specifications:

(1) Spec. 11B (§ 78.161 of this chapter). Strong, tight, sparkproof wooden barrels.

(2) Spec. 15A, 15B, 16A, or 19A (§§ 78.168, 78.169, 78.185, or 78.190 of this chapter). Wooden boxes. Gross weight not to exceed 500 pounds.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes. Gross weight not to exceed 65 pounds except as provided in subparagraph (5) of this paragraph. Not permitted for illuminating projectiles and aeroplane flares.

(4) Fireworks that can be exploded en masse, by dropping the completed ship-

ping container from a height of six feet or by the impact of a rifle bullet, if found safe for transportation, may be shipped in accordance with the regulations in this part applying to high explosives.

(5) Ship distress signals when packed in tight inside metal containers of not less than 24 gauge sheet iron or other metal of equal strength, securely closed by positive means (not friction) and of such design and so arranged as to completely fill the outside container, may be packed in spec. 12B (§ 78.205 of this chapter) fiberboard boxes. Gross weight not to exceed 95 pounds when boxes are made in accordance with § 78.205–29 of this chapter.

(b) Flash or spreader cartridges not exceeding 72 grains of flash powder each must be packed in containers complying with the following specifications:

(1) Spec. 15A, 15B, 16A, or 19A (§§ 78.168, 78.169, 78.185, or 78.190 of this chapter). Wooden boxes or spec. 12B (§ 78.205 of this chapter) fiberboard boxes, with inside containers which must be cartons or tin cans containing not over 6 cartridges and not to exceed 150 cartons or cans to an outer box.

(c) Flash cartridges consisting of a paper cartridge shell, small arms primer, and flash composition, not exceeding 180 grains each, all assembled in one piece ready for firing must be packed in containers complying with the following specifications:

(1) Spec. 15A, 15B, 16A, or 19A (§§ 78.168, 78.169, 78.185, or 78.190 of this chapter). Wooden boxes, or spec. 12B (§ 78.205 of this chapter) fiberboard boxes, with inside containers which must be cartons containing not to exceed 12 cartridges each and not more than 12 such cartons in one outside box.

(2) Flash cartridges, in quantity not exceeding 5 pounds, when in small interior wooden boxes, may be packed with nonexplosive, nonflammable or noncorrosive articles.

(d) Flash sheets must be packed in containers complying with the following specifications:

(1) Spec. 15A, 15B, 16A, or 19A (§§ 78.168, 78.169, 78.185, or 78.190 of this chapter). Wooden boxes, or spec. 12B (§ 78.205 of this chapter) fiberboard boxes, with inside containers which must be an inner package or envelope containing not more than 6 flash sheets and not more than one dozen inner envelopes or packages inclosed in each inner pasteboard box or carton. Gross weight of wooden box not to exceed 150 pounds. Gross weight of fiberboard box not to exceed 65 pounds.

(2) Flash sheets, in quantity not exceeding 5 pounds, when in small interior wooden boxes, may be packed with nonexplosive, nonflammable, or noncorrosive articles.

(e) Photographic flash powder must be packed in containers complying with the following specifications:

(1) Spec. 15A, 15B, 16A, or 19A (§§ 78.168, 78.169, 78.185, or 78.190 of this chapter). Wooden boxes, or spec. 12B (§ 78.205 of this chapter) fiberboard boxes, with inside containers which must be any inside container sufficiently strong to retain contents not exceeding 2 ounces each. If bottles are used, each bottle must be packed in a securely closed fiber mailing tube having metal ends. Not more than 4 dozen 2-ounce bottles may be packed in an outer wooden box. When packed in units not exceeding 1 ounce each without bottles in similar fiber mailing tubes and outer wooden boxes, the gross weight of one outside box must not exceed 150 pounds. Gross weight of fiberboard box not to exceed 65 pounds.

(2) Photographic flash powder, in quantity not exceeding 5 pounds, when in small interior wooden boxes, may be packed with nonexplosive, nonflammable, or noncorrosive articles.

(f) Railway torpedoes (track torpedoes) must be packed in containers complying with the following specifications:

(1) Spec. 15A, 15B, 16A, 19A, or 19B (§§ 78.168, 78.169, 78.185, 78.190, or 78.191 of this chapter). Wooden boxes. Net weight not to exceed 125 pounds.

(2) Spec. 12H, 23F, or 23H (§ 78.209, § 78.214, or § 78.219 of this chapter). Fiberboard boxes. Gross weight not to exceed 65 pounds.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, with inside containers which must be cartons containing not to exceed one-half gross track torpedoes each. Gross weight of outside fiberboard box not to exceed 65 pounds.

(4) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes without inside containers may be used for not more than 50 track torpedoes provided the smallest dimension of the box is not less than 6 inches.

(g) Toy torpedoes must be securely packed as prescribed in this section in containers complying with the following specifications:

(1) Spec. 15A, 15B, 16A, or 19A (§§ 78.168, 78.169, 78.185, or § 78.190 of this chapter) wooden boxes, or spec. 12B (§ 78.205 of this chapter) fiberboard boxes which must be constructed to comply with § 78.205–30 of this chapter. Not more than 20 one-quarter gross cartons totalling not more than 5 gross of toy torpedoes are authorized per fiberboard box. Gross weight of fiberboard box must not exceed 35 pounds. Gross weight of wooden box must not exceed 65 pounds.

(2) Toy torpedoes of any kind must not be packed with other fireworks.

(3) Toy torpedoes containing a cap must be packed in sawdust, in inside paper or cardboard cartons. The size of the carton must be not less than 4 cubic inches for each grain of explosive.

(4) Toy torpedoes containing a mixture of potassium chlorate, black antimony and sulfur, must be packed in an inner container, containing not more than one-fourth gross. The capacity of this inner container must be not less than 105 cubic inches, and it must be divided into 12 equal compartments. All vacant space inside the container must then be filled with sawdust or fine shavings.

(5) The gross weight of a container of toy torpedoes must not exceed 65 pounds.

(h) Except as otherwise specified in this section the gross weight of one outside container of special fireworks must not exceed 500 pounds.

(i) *Marking.* Each outside container of special fireworks must be plainly marked in letters not less than 7/16 inch in height "SPECIAL FIREWORKS—HANDLE CAREFULLY—KEEP FIRE AWAY", except that each outside container of railway torpedoes must be plainly marked in letters not less than 7/16 inch in height "RAILWAY TORPEDOES—HANDLE CAREFULLY—KEEP FIRE AWAY".

(1) Outside containers of toy torpedoes must in addition be marked "TOY TORPEDOES".

(j) *Label.* Each outside container of special fireworks when offered for transportation by carriers by rail express or water must have securely and conspicuously attached to it a square red label as described in § 73.410.

**§ 73.92 Jet thrust units (jato), class B, igniters, jet thrust (jato), class B, or starter cartridges, jet engine, class B.**

(a) Jet thrust units (jato), class B, must not be shipped with igniters assembled therein unless shipped by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government. Jet thrust units (jato), class B, igniters, jet thrust (jato), class B, or starter cartridges, jet engine, class B, must be packed in outside containers complying with the following specifications:

(1) Spec. 14, 15A, 15E, or 16A (§§ 78.165, 78.168, 78.172 and 78.185 of this chapter), wooden boxes or wooden boxes, fiberboard lined.

(2) Spec. 15B (§ 78.169 of this chapter), wooden boxes. Authorized only for igniters, jet thrust (jato), class B.

(3) Spec. 23F (§ 78.214 of this chapter). Fiberboard boxes. Authorized for igniters, jet thrust (jato), class B, or starter cartridges, jet engine, class B, only, which must be packed in tightly closed inside fiberboard boxes, at least 200-pound test (Mullen or Cady), or metal containers. Starter cartridges, jet engine, must have igniter wires short-circuited when packed for shipment.

(4) Jet thrust units (jato), class B, may be packed in the same outside shipping container with separately packaged igniters, jet thrust, class B, when the containers are approved by the Bureau of Explosives.

(b) Jet thrust units (jato), class B, or igniters, jet thrust (jato), class B, packed in any other manner must be approved by the Bureau of Explosives.

(c) Each outside package must be plainly marked "JET THRUST UNITS, CLASS B EXPLOSIVES," "IGNITERS, JET THRUST, CLASS B EXPLOSIVES," or "STARTER CARTRIDGES, JET ENGINE, CLASS B EXPLOSIVES."

(d) *Label.* Each outside container of igniters, jet thrust (jato), class B explosives, jet thrust units (jato), class B explosives, or starter cartridges, jet engine, class B explosives, when offered for transportation by rail express, must have securely and conspicuously attached to it a square red label as described in § 73.412.

**§ 73.93 Propellant explosives (solid) for cannon, small arms, rockets, guided missiles, or other devices, and propellant explosives (liquid).**

(a) Propellant explosives (solid) for cannon, small arms, rockets, guided missiles, or other devices, when offered for transportation by carriers by rail freight, highway, or water, must be packed in containers complying with the following specifications (see paragraphs (g) (1) and (2) of this section and § 75.675 of this chapter for shipments by rail express):

(1) Spec. 10B (§ 78.156 of this chapter). Wooden barrels or kegs. Gross weight not to exceed 200 pounds.

(2) Spec. 13 (§ 78.140 of this chapter). Metal kegs at least 8 inches long. Gross weight not to exceed 150 pounds.

(3) Bundles of metal kegs, spec. 13 (§ 78.140 of this chapter), firmly tied together with rope and wrapped in strong burlap, canvas, or similar material, securely sewed and roped, are authorized. Net weight of propellant explosives must not exceed 100 pounds.

(4) Tight metal cases in tight wooden boxes free from loose knots and cracks or tight metal containers. Gross weight not to exceed 200 pounds.

(5) Spec. 14 or 15A (§§ 78.165 or 78.168 of this chapter). Wooden boxes, metal-lined, spec. 2F (§ 78.25 of this chapter). Gross weight not to exceed 200 pounds.

(6) Spec. 14 or 15A (§ 78.165 or § 78.168 of this chapter) wooden boxes or spec. 23F or 23H (§ 78.214 or § 78.219 of this chapter) fiberboard boxes, with inside containers which must be cloth or paper bags, of capacity not exceeding 25 pounds, net weight, each capable of withstanding, when filled to shipping content, at least two drops on end from a height of 4 feet, without breakage or sifting of contents. Outside container not to exceed more than 50 pounds, net weight.

(7) Spec. 14, 15A, 15B, or 15C (§§ 78.165, 78.168, 78.169, or § 78.170 of this chapter) wooden boxes, or spec. 12B, 23F, or 23H (§§ 78.205, 78.214, or § 78.219 of this chapter) fiberboard boxes, with inside containers which must be spec. 13 metal kegs. Spec. 12B (§ 78.205 of this chapter) fiberboard boxes shall contain not more than 6 metal kegs not over 5 pounds net weight each in one outside box. Gross weight not to exceed 200 pounds in wooden boxes or 65 pounds in fiberboard boxes.

(8) Spec. 14, 15A, 15B, or 15C (§§ 78.165, 78.168, 78.169, or 78.170 of this chapter) wooden boxes, or spec. 12H, 23F, or 23H (§§ 78.209, 78.214, or 78.219 of this chapter) fiberboard boxes, with inside containers which must be fiber or metal containers of not more than 1½ pounds capacity each. Gross weight not to exceed 200 pounds in wooden boxes or 65 pounds in fiberboard boxes.

(9) Spec. 14, 15A, 15B or 15C (§§ 78.165, 78.168, 78.169 or 78.170 of this chapter) wooden boxes, or spec. 23F or 23H (§§ 78.214 or 78.219 of this chapter) fiberboard boxes, with inside containers which must be not to exceed four metal containers, spec. 2A (§ 78.20 of this chapter), of not more than 25 pounds each. Gross weight in fiberboard boxes not to exceed 65 pounds.

(10) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Drums having wooden heads must be provided with a strong sift-proof liner. Authorized net weight not over 225 pounds.

(11) Spec. 14, 15A, or 16A (§§ 78.165, 78.168, or 78.185 of this chapter). Wooden boxes, not lined, authorized only for grains not less than 1-inch in diameter or 3 inches in length, provided such grains are tightly packed and are coated with a protective material. Gross weight not to exceed 200 pounds.

(12) Propellant explosives packed in any manner other than as specifically provided for in this paragraph must be in containers approved by the Bureau of Explosives.

(b) Propellant explosives (smokeless powder for cannon or small-arms) in water when offered for transportation by carriers by rail freight, highway, or water must be packed in containers complying with the following specifications:

(1) Spec. 5, 5A, 5B, 6A, 6B, or 6C (§§ 78.80, 78.81, 78.82, 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 10A or 10B (§§ 78.155 or 78.156 of this chapter). Wooden barrels or kegs.

(3) Spec. 15A (§ 78.168 of this chapter). Wooden boxes, metal-lined, spec. 2F (§ 78.25 of this chapter).

(c) Igniters composed of black powder may be included in shipments of propellant explosives.

(d) Propellant explosives (unstable, condemned, or deteriorated smokeless powder for cannon or small arms) must be packed submerged in water in containers complying with the following specifications:

(1) Spec. 5, 5A, 5B, 6A, 6B, or 6C (§§ 78.80, 78.81, 78.82, 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 10A or 10B (§§ 78.155 or 78.156 of this chapter). Wooden barrels or kegs.

(3) Spec. 15A (§ 78.168 of this chapter). Wooden boxes, metal-lined, spec. 2F (§ 78.25 of this chapter).

(4) Spec. 103, 103–W, or 111A100–W–1 (§§ 78.265, 78.280 or 78.303 of this chapter). Tank cars.

(5) Propellant explosives (unstable, condemned, or deteriorated smokeless powder for cannon or small arms) must not be offered for transportation by rail express.

(e) Propellant explosives (liquid), when offered for transportation by rail freight, highway, or water, must be packed in containers complying with the following specifications (see § 73.93(g) for shipments by rail express):

(1) Spec. 15A, 15B, or 15E (§ 78.168, 78.169, or 78.172 of this chapter). Wooden box or wooden box fiberboard lined, with inside polyethylene bottles having taped screw-cap closures, not over 1 gallon capacity each. Each bottle must be entirely contained within a polyethylene or other suitable plastic bag formed of material not less than 0.004 inch thickness, with ends securely closed. Each bottle in the plastic bag shall be enclosed in a tight metal container and be surrounded on all sides with at least 2 inches of incombustible cushioning material; cans in the outside box must likewise be cushioned from each other and sides, top, and bottom of the container.

(2) Spec. 5B, 6A, 6B, 6C, 6D; also 17C or 17H (single-trip containers) (§ 78.82, 78.97, 78.98, 78.99, 78.102, 78.115, or 78.118 of this chapter). Metal barrel, drum, or cylindrical steel overpack, with inside spec. 2S (§ 78.35 of this chapter) polyethylene container, packed inside a strong, tight metal drum securely closed, or with inside glass-lined aluminum carboy not over 12 gallons capacity. Inside steel drum or glass-lined aluminum carboy must be surrounded on all sides with at least 2 inches of incombustible absorbent cushioning material uniformly distributed. Polyethylene containers are authorized only for liquids that will not react dangerously with the plastic or result in container failure.

(3) Outage requirements. Containers must not be entirely filled. Sufficient interior space must be left vacant to prevent leakage or distortion of containers due to the expansion of the contents from increase of temperature during transit.

(4) Propellant explosives (liquid) packed in any manner other than as specifically provided for in this paragraph must be in containers approved by the Bureau of Explosives.

(f) Each outside container must be plainly marked "PROPELLANT EXPLOSIVES (LIQUID), CLASS B," "PROPELLANT EXPLOSIVES (SOLID), CLASS B," or "PROPELLANT EXPLOSIVES (SOLID), CLASS B, IN WATER," as the case may be. There may be added such additional marking as "Smokeless Powder for Cannon" or "Smokeless Powder for Small Arms," as the case may be.

(g) Propellant explosives when offered for transportation by rail express must be packed as follows (also authorized for transportation by carriers by rail freight, highway, or water):

(1) Solids in tightly closed metal cans or fiber containers, not exceeding 1 pound each, or in inside metal cans or fiber containers containing not more than one grain of propellant, not exceeding 5 pounds each, and liquids in polyethylene bottles compatible with contained liquid, with screw-cap closures taped, not exceeding 1 pound or 16 fluid ounces capacity each, packed in outside wooden box, spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter); or outside fiberboard box, spec. 12B, 23F, or 23H (§§ 78.205, 78.214, or 78.219 of this chapter). Not more than 1,000 small-arms primers packed in inside containers as prescribed by § 73.107 may be included in one outside shipping container with solid propellant explosives. Inside containers must be packed so as to prevent movement within the outside container. Not more than 10 pounds of propellant explosives may be shipped in one outside container. Each outside container must be plainly marked "PROPELLANT EXPLOSIVES (LIQUID), CLASS B," or "PROPELLANT EXPLOSIVES (SOLID), CLASS

B," or "PROPELLANT EXPLOSIVES, CLASS B, and SMALL-ARMS PRIMERS," as the case may be.

(2) Label: Each outside container of propellant explosives, when offered for transportation by rail express, must have securely and conspicuously attached to it a square red label as described in § 73.412.

**§ 73.94 Explosive power devices, class B.**

(a) Explosive power devices, class B, must not be shipped with igniters assembled therein unless shipped by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government or unless of a type approved by the Bureau of Explosives. Explosive power devices, class B, must be packed in outside containers complying with the following specifications:

(1) Spec. 14, 15A, 15E, or 16A (§§ 78.165, 78.168, 78.172, or 78.185 of this chapter). Wooden boxes or wooden boxes, fiberboard lined.

(2) Strong wooden or metal boxes or containers. Authorized only for shipments made by, for, or to the Departments of the Army, Navy, or Air Force of the United States Government.

(b) Explosive power devices, class B, packed in any other manner must be in containers of a type approved by the Bureau of Explosives.

(c) Each outside container must be plainly marked "EXPLOSIVE POWER DEVICES, CLASS B" and "HANDLE CAREFULLY—KEEP FIRE AWAY."

(d) Label: Each outside container of explosive power devices when offered for transportation by rail express, must have securely and conspicuously attached to it a square red label as described in § 73.412.

CLASS C EXPLOSIVES; DEFINITIONS

**§ 73.100 Definition of Class C explosives.**

(a) Explosives, class C, are defined as certain types of manufactured articles which contain class A, or class B explosives, or both, as components but in restricted quantities, and certain types of fireworks. These explosives are further specifically described in this section.

(b) Small-arms ammunition is fixed ammunition consisting of a metallic, plastic composition, or paper cartridge case, a primer, and a propelling charge, with or without bullet, shot, tear gas material, tracer components, or incendiary compositions or mixtures, but not including bullets loaded with high explosives, and is further limited to the following:

(1) Ammunition designed to be fired from a pistol, revolver, rifle, or shotgun held by the hand or to the shoulder.

(2) Ammunition of caliber less than .75 inch (19.05 millimeters) designed to be fired from machine guns.

(3) Blank cartridges including canopy remover cartridges, starter cartridges, and seat ejector cartridges, containing not more than 500 grains of propellant powder, provided that such cartridges shall be incapable of functioning en masse as a result of the functioning of any single cartridge in the container or as a result of exposure to external flame.

(c) Explosive cable cutters are used for cutting cables, etc. They consist of a metal device containing a knife-edged component which is propelled by a small charge of an explosive compound.

(d) Cordeau detonant fuse is a fuse containing a core of pentaerythrite tetranitrate or cyclotrimethylene-trinitramine not exceeding 400 grains per linear foot, overspun with tapes, yarns and plastics or waterproofing compounds. Wire countering is permissible.

(e) Percussion fuzes, combination fuzes, and time fuzes are devices designed to ignite powder charges of ammunition or to initiate an intermediate charge (booster) in projectiles, bombs, etc. When such fuzes are assembled with booster charges they are properly described as "detonating fuzes" (see § 73.53 (g) (2)).

(f) Tracer fuzes and tracers are devices which are attached to projectiles and contain a slow-burning composition to show the flight of projectiles at night.

(g) Cartridge bags, empty, with black powder igniters consist of empty bags having attached thereto an igniter composed of black powder. (See § 73.93 (b), (c), and (d) when shipped with propellant explosives.)

(h) Igniters consist of fiberboard, plastic, paper or metal tubes containing a small quantity of igniting compound which is ignited by the action of a primer, pull wire or scratch composition.

(i) Delay electric igniters consist of small metal, fiberboard, or pasteboard tubes containing a wire bridge in contact with a small quantity of ignition compound. The ignition compound is in contact with or in close proximity to a short piece of safety fuse.

(j) Electric squibs consist of small tubes or blocks containing a small quantity of ignition compound in contact with a wire bridge.

(k) Fuse lighters and fuse igniters are small cylindrical hollow pasteboard or metal tubes containing an igniting composition in one end, the other end being open to permit it to be placed on safety fuse.

(l) Safety squibs are small paper tubes containing a small quantity of black powder. One end of each tube is usually twisted and tipped with sulfur.

(m) Instantaneous fuse is cotton yarn impregnated with meal powder. No restrictions other than packing in strong wooden boxes or barrels plainly marked "INSTANTANEOUS FUSE" are prescribed in this part.

(n) Primers are devices used to ignite the powder charges of ammunition or the black powder bursting charges of projectiles. For small-arms ammunition the primers are "small-arm primers" or "percussion caps".

(o) Safety fuse, consisting of a core of black powder overspun with yarns, waterproofing compounds, and/or tapes must be packed in outside fiberboard boxes, wooden boxes, wooden barrels, bales, or metal containers, and must be described for shipping purposes as "SAFETY FUSE". No other restrictions apply in this part.

(p) Toy paper caps, consisting of paper cap ammunition for toy pistols, in sheets, strips, rolls, or individual caps, must not contain more than an average of twenty-five hundredths of a grain of explosive composition per cap and must be packed in inside packages constructed of cardboard not less than 0.013 inch in thickness, metal not less than 0.008 inch in thickness, or noncombustible plastic not less than 0.015 inch in thickness, which shall provide a complete enclosure and the minimum dimensions of each side or end of such package shall be not less than ⅛ inch in height. Unless greater weight of composition is approved by the Bureau of Explosives, the number of caps in these inside packages shall be limited so that not more than 10 grains of explosive composition shall be packed into one cubic inch of space and not exceeding 17.5 grains of the explosive composition of toy caps shall be packed in any inside container. These inner containers must be packed in outside containers as specified in § 73.109.

(q) Explosive rivets, each containing not more than 375 milligrams of explosive composition, are exempt from specification packaging and labeling requirements when packed in pasteboard or other inside boxes in securely closed strong wooden boxes, fiberboard boxes or metal containers. Each outside container must be marked "EXPLOSIVE RIVETS". No other restrictions apply in this part.

(r) Common fireworks are fireworks devices suitable for use by the public and designed primarily to produce visible effects by combustion. Some small devices designed to produce audible effects are also included in this class. The types, sizes and amount of pyrotechnic contents of these devices are limited as enumerated in this paragraph. No component, of any device listed in this paragraph, which produces or is intended to produce an audible effect shall contain pyrotechnic composition in excess of 2 grains in weight; nor shall such device or component, upon functioning, project or disperse any metal, glass or brittle plastic fragments. (Propelling or expelling charges consisting of a mixture of sulfur, charcoal, and saltpeter are not considered as designed to produce audible effects.) Any new device, not enumerated in this paragraph, must be approved by the Bureau of Explosives before being offered for transportation as Common Fireworks. Common fireworks must be in a finished state exclusive of mere ornamentation as supplied to the retail trade and must be so constructed and packed that loose pyrotechnic composition will not be present in packages in transportation. Fireworks, except articles defined in paragraphs (s) through (y) inclusive, of this section, other than common fireworks as defined in this paragraph, and those forbidden for transportation in § 73.51, are classed as Special Fireworks (see § 73.88(d)).

(1) Roman candles, not exceeding ten balls spaced uniformly in the tube, total pyrotechnic composition not to exceed twenty grams each in weight. The inside tube diameter shall not exceed ⅜ inch.

(2) Sky rockets with sticks, total pyrotechnic composition not to exceed

twenty grams each in weight. The inside tube diameter shall not exceed ½ inch. The rocket sticks must be securely fastened to the tubes.

(3) Helicopter type rockets, total pyrotechnic composition not to exceed twenty grams each in weight. The inside tube diameter shall not exceed ½ inch.

(4) Cylindrical fountains, total pyrotechnic composition not to exceed seventy-five grams each in weight. The inside tube diameter shall not exceed ¾ inch.

(5) Cone fountains total pyrotechnic composition not to exceed fifty grams each in weight.

(6) Wheels, total pyrotechnic composition not to exceed sixty grams for each driver unit or two hundred and forty grams for each complete wheel. The inside tube diameter of driver units shall not exceed ½ inch.

(7) Illuminating torches and colored fire in any form, total pyrotechnic composition not to exceed one hundred grams each in weight.

(8) Dipped sticks, the pyrotechnic composition of which contains any chlorate or perchlorate shall not exceed 5 grams. Sparklers, the composition of which does not exceed 100 grams each and which contain no magnesium or magnesium and a chlorate or perchlorate, are not subject to the regulations in Parts 71–78 and 197 of this chapter.

(9) Mines and shells of which the mortar is an integral part, total pyrotechnic composition not to exceed forty grams each in weight.

(10) Firecrackers and salutes with casings, the external dimensions of which do not exceed one and one-half inches in length or one-quarter inch in diameter, total pyrotechnic composition not to exceed two grains each in weight.

(11) Novelties consisting of two or more devices enumerated in this paragraph when approved by the Bureau of Explosives.

(s) Igniter cord consists of textile yarns and/or a wire uniformly covered with a combustible chemical mixture, with or without additional textile or wire counterings, waterproofing or finishing coatings which, when ignited, burns externally at various rates according to design. Igniter cord must be packed in strong, tight, outside fiberboard boxes or drums, wooden boxes or metal containers plainly marked "IGNITER CORD."

(t) Explosive auto alarms are tubular devices containing a small amount of explosive composition and igniting compound which is ignited by an electric spark. These devices must be so designed that they will neither burst nor cause external flame on functioning.

(u) Toy propellant devices and toy smoke devices consist of small paper or composition tubes or containers containing a small charge of slow burning propellant powder or smoke producing powder. These devices must be so designed that they will neither burst nor produce external flame on functioning and ignition elements, if attached, must be of a design approved by the Bureau of Explosives.

(v) Oil well cartridges are tubular devices consisting of a thin fiber, metal, or composition shell containing not more than 200 grains of propellant powder and having no ignition device or element.

(w) Actuating cartridges, explosive, fire extinguisher or valve consist of a small metal or fiber housing containing a small amount of initiating explosive and a propellant and are used to actuate valves on remotely controlled fire extinguishers or other apparatus.

(x) Cigarette loads, trick matches, and trick noise makers, explosive, must be of a type approved by the Bureau of Explosives and are described as follows:

(1) Cigarette loads consist of wooden pegs to which are affixed a small amount of explosive composition.

(2) Trick matches consist of book matches, strike anywhere matches, or strike-on-box matches which have small amounts of explosive or pyrotechnic composition affixed to the match stem just below the match head.

(3) Trick noise makers, explosive, consist of spheres containing a small amount of explosive composition.

(y) Smoke candles, smoke pots, smoke grenades, and smoke signals containing not more than 200 grams of pyrotechnic composition each (see Note 1) unless greater weight of composition is approved by the Bureau of Explosives, exclusive of smoke compositions (see Note 2), without bursting charges, hand signals devices, Very signal cartridges, and highway or railway fusees are devices designed to produce visible effects for signal purposes.

NOTE 1: Pyrotechnic compositions (other than smoke compositions) are defined as chemical mixtures which on burning and without explosion, produce visible or brilliant displays or bright lights.

NOTE 2: Pyrotechnic smoke compositions are defined as chemical smoke producing mixtures, which on ignition burn at a controlled rate, without the production of flame and without the build-up of internal pressure that would rupture or burst the end product.

(z) Explosive release devices consist of a rod or link fitted with means for mechanical attachment to other apparatus or equipment and containing a small electrically initiated explosive charge which will break the rod or link upon functioning. These devices must be so designed that they will not function other explosive devices in the package sympathetically.

(aa) Explosive power devices, class C, are devices designed to drive generators or mechanical apparatus by means of propellant explosives, class B. The devices consist of a housing with a contained propellant charge and an electric igniter or squib. The devices must be of a type approved by the Bureau of Explosives for this classification.

(bb) Detonating fuzes, class C explosives, are used in the military service to detonate high explosive bursting charges of projectiles, mines, bombs, torpedos, grenades, demolition charges, and safety and arming devices. They contain a detonator and a quantity of high explosives. Additionally they may be used by the military or commercial users to transmit a detonation between two or more devices. This type detonating fuze contains either an explosive train consisting of mild detonating fuse, metal clad, igniter fuse-metal clad or similar type fuses, and any combination of one or more boosters, detonators and high explosives in a total quantity not exceeding 25 grams of explosive composition. All detonating fuzes, class C explosives, must be made and packed so that they will not cause functioning of other fuzes, explosives, or other explosive devices if one of the fuzes detonates in a shipping container or in adjacent containers.

(cc) Mild detonating fuses, metal clad and flexible linear shaped charges, metal clad consists of a core containing not more than 2½ grains of high explosive composition per lineal foot, clad with metal either with or without a covering of tapes, yarns, plastics or waterproofing compounds. Mild detonating fuse, metal clad, and flexible linear shaped charges, metal clad, in lengths not over 26 feet and not exceeding 15 grains per lineal foot having the individual lengths separated from adjacent lengths so that mass propagation will not occur, may be shipped as class C explosives.

(dd) Igniter fuse-metal clad consists of a base metal tube with a core of explosive igniter composition in quantity not exceeding 20 grains per foot.

(ee) Starter cartridges, jet engine, class C, consist of a metal, plastic, and/or rubber case, each containing a pressed cylindrical block of flammable solid material and having in the top of the case a small compartment that encloses an electric squib, small amount of black powder, and/or smokeless powder which constitute an igniter. The starter cartridge is used to activate a mechanical starter for jet engines and must be of a type approved by the Bureau of Explosives except as provided in § 73.51(q) and § 73.86(a).

**§ 73.101 Small-arms ammunition.**

(a) Small-arms ammunition must be packed in pasteboard or other inside boxes, or in partitions designed to fit snugly in the outside container, or must be packed in metal clips. The partitions and metal clips must be so designed as to protect the primers from accidental injury. The inside boxes, partitions and metal clips must be packed in securely closed strong outside wooden or fiberboard boxes or metal containers. Blank Industrial Power Load cartridges, similar to the 22 long rim-fire cartridge, may be packed in bulk in securely closed fiberboard boxes.

(b) Small-arms ammunition in pasteboard or other inside boxes, in addition to containers prescribed in paragraph (a) of this section, may be shipped when packed in the same outside container with nonexplosive and nonflammable articles; or with small-arms primers or percussion caps in quantity not to exceed 5 pounds. The weight of the small-arms ammunition packed with other articles must not exceed 55 pounds in outside fiberboard box, or 75 pounds in outside wooden box. The outside package must be a securely closed strong wooden or fiberboard container.

(c) Each outside package must be plainly marked "SMALL-ARMS AMMUNITION".

(d) Outside containers of cartridges with tear gas material must in addition to marking prescribed herein be marked "TEAR GAS CARTRIDGES" and must be labeled with "TEAR GAS" label. (See § 73.409 (a) (3) for label.)

(e) No restrictions other than proper description, packing and marking for small-arms ammunition and additional marking and labeling for tear gas cartridges are prescribed in this part for the transportation of small-arms ammunition and tear gas cartridges.

(f) Shipments of small-arms ammunition, including broken lots which have lost their identity (lot number identification), may be shipped loosely packed in securely closed strong wooden boxes or metal boxes, in carload or truckload lots, when shipments are made by or for the Departments of the Army, Navy or Air Force of the United States Government to depots or manufacturing plants for reprocessing or demilitarization. Seriously deteriorated ammunition or ammunition damaged to the point of exposing incendiary or tracer composition, spillage of propellant powder, or ammunition with other hazardous defects must not be shipped. Each outside package must be plainly marked "SMALL-ARMS AMMUNITION."

**§ 73.102 Explosive cable cutters, explosive power devices, class C, explosive release devices, or starter cartridges, jet engine, class C.**

(a) Explosive cable cutters, explosive power devices, class C, explosive release devices, or starter cartridges, jet engine, class C must be packed in specification containers as follows:

(1) Spec. 12H, 23F, or 23H (§ 78.209, 78.214, or 78.219 of this chapter). Fiberboard boxes. Authorized gross weight not to exceed 65 pounds.

(2) In addition to specification containers prescribed in this section, explosive cable cutters, explosive power devices, class C, explosive release devices, or starter cartridges, jet engine, class C may be shipped when packed in strong wooden or metal boxes, or other containers approved by the Bureau of Explosives. Starter cartridges, jet engine, must have igniter wires short-circuited when packed for shipment.

(b) Each outside container must be plainly marked "EXPLOSIVE CABLE CUTTERS," "EXPLOSIVE POWER DEVICES, CLASS C," "EXPLOSIVE RELEASE DEVICES," or "STARTER CARTRIDGES, JET ENGINE, CLASS C" and "HANDLE CAREFULLY—KEEP FIRE AWAY."

**§ 73.103 Blasting caps, blasting caps with safety fuse, blasting caps with metal clad mild detonating fuse, and electric blasting caps, not exceeding 1,000 caps.**

(a) Blasting caps, blasting caps with safety fuse, blasting caps with metal clad mild detonating fuse, and electric blasting caps, in quantity not exceeding 1,000 caps, must be packed and marked as prescribed in §§ 73.66 and 73.67.

(b) Blasting caps must not be offered for transportation by rail express, except as provided in § 73.86.

**§ 73.104 Cordeau detonant fuse, mild detonating fuse, metal clad or flexible linear shaped charges, metal clad.**

(a) Cordeau detonant fuse, mild detonating fuse, metal clad or flexible linear shaped charges, metal clad must not be packed in the same package with detonators or with any high explosive.

(b) Cordeau detonant fuse, mild detonating fuse, metal clad or flexible linear shaped charges, metal clad, must be packed in wooden or fiberboard boxes.

(c) Each outside container must be plainly marked "CORDEAU DETONANT FUSE—HANDLE CAREFULLY," "MILD DETONATING FUSE, METAL CLAD—HANDLE CAREFULLY" or "FLEXIBLE LINEAR SHAPED CHARGES, METAL CLAD—HANDLE CAREFULLY" as the case may be.

**§ 73.105 Percussion, tracer, combination, time fuzes and tracers.**

(a) Percussion, tracer, combination, time fuzes and tracers must be packed in strong, tight, outside wooden boxes or spec. 23F (§ 78.214 of this chapter) fiberboard boxes, with special provision for securing individual packages of fuzes or tracers against movement in the box.

(b) The gross weight of one outside wooden box must not exceed 150 pounds, and the gross weight of one outside fiberboard box must not exceed 65 pounds.

(c) Each outside container must be plainly marked with proper descriptive name and also "HANDLE CAREFULLY"

(d) No restrictions other than proper description, packing, and marking are prescribed in this part for the transportation of percussion, tracer, time, or combination fuzes, or tracers.

**§ 73.106 Cartridge bags, empty, with black powder igniters, igniters, safety squibs, electric squibs, delay electric igniters, igniter fuse-metal clad, and fuse lighters or fuse igniters.**

(a) Cartridge bags, empty, with black powder igniters, igniters, safety squibs, electric squibs, delay electric igniters, igniter fuse-metal clad, and fuse lighters or fuse igniters must be packed in strong fiberboard or wooden boxes or wooden or metal barrels or drums properly described and properly marked with the name of the article packed therein.

**§ 73.107 Primers, percussion caps, and empty grenades, primed.**

(a) Primers (cannon, combination and small arms), percussion caps, and empty grenades, primed, must be packed in strong, tight, outside wooden boxes, except as otherwise provided herein, with special provision for securing individual packages against movement in the box.

(b) Empty cartridge cases, primed, must be packed in strong, tight, outside wooden or fiberboard boxes.

(c) Small-arms primers containing anvils must be packed in cellular inside packages, with partitions separating the layers and columns of the primers, so that the explosion of a portion of the primers in the completed shipping package will not cause the explosion of all the primers. They must be packed as prescribed in paragraphs (a) of this section or in spec. 12B (§ 78.205 of this chapter) fiberboard boxes, and equipped with corrugated fiberboard liners having Mullen or Cady test equal to or exceeding that of the box, except liner is not required for full depth telescope style box which may be closed as specified by § 78.205–17(a)(2) of this chapter. Not more than 5,000 primers shall be packed in each fiberboard box.

(1) Spec. 23H (§ 78.219 of this chapter). Fiberboard boxes of full depth telescope style with top section having extended end flaps and bottom section with extended side flaps designed to tuck under and form boxes without glued or stapled joints. Boxes shall have full height inside perimeter liner and top and bottom full area pads of double-wall corrugated fiberboard. Hand-holes oval in shape, not more than 1 inch in width by 4 inches in length and horizontal with top score line, are authorized in ends of boxes. Primers shall be packed in cellular inside packages with partitions separating the layers and columns of the primers as required by the introductory text of this paragraph. Not more than 50,000 primers shall be packed in one outside box.

(d) Percussion caps must be packed in metal or other inside boxes containing not more than 500 caps; the construction of the cap or packing and the kind and quantity of explosives in each must be such that the explosion of a part of the caps in the completed shipping package will not cause the explosion of all the caps.

(e) Small-arms primers and/or percussion caps may be packed with nonexplosive and/or nonflammable articles, or with small-arms ammunition as provided in § 73.101(b). Small-arms primers may be included with propellant explosives (solid), class B, in the same outside container as provided in § 73.93 (g)(1). The weight of the small-arms primers or percussion caps must not exceed 5 pounds in any such outside container.

(f) The gross weight of one outside package must not exceed 150 pounds.

(g) Each outside container must be plainly marked with proper descriptive name and also "HANDLE CAREFULLY".

(h) No restrictions other than proper shipping name, packing and marking are prescribed in this part for the transportation of percussion caps, cannon primers, small-arms primers, combination primers, empty cartridge cases primed, or empty grenades primed.

**§ 73.108 Common fireworks, signal flares, hand signal devices, railway or highway fusees, smoke signals, smoke candles, smoke grenades, smoke pots, and Very signal cartridges.**

(a) Common fireworks, signal flares, hand signal devices, railway or highway fusees, smoke signals, smoke candles, smoke grenades, smoke pots, and Very

signal cartridges, unless otherwise specifically provided for, must be securely packed in containers complying with the following specifications:

(1) Spec. 11B (§ 78.161 of this chapter). Strong, tight, sparkproof wooden barrels.

(2) Spec. 15A, 15B, 16A, or 19A (§§ 78.168, 78.169, 78.185, or 78.190 of this chapter). Wooden boxes. Gross weight not to exceed 100 pounds, except gross weight of 500 pounds is authorized for Very signal cartridges only.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes. Gross weight not to exceed 65 pounds.

(4) Firecrackers, Chinese, in addition to containers specified in paragraph (a) (1), (2), and (3) of this section, may also be transported in the package in which they are imported, provided these packages consist of wooden boxes, or fiberboard boxes, spec. 12B (§ 78.205 of this chapter), in good condition, completely covered with strong matting and do not weigh more than 100 pounds, gross.

(5) Fireworks, such as sparklers or fusees, with match tip or head, or similar igniting point or surface, must have each individual tip, head, or similar igniting point or surface entirely covered and securely protected against accidental contact or friction.

(b) Railway fusees, flares or highway signals must be packed in containers complying with the following specifications:

(1) Spec. 15A, 15B, 15C, 16A, 19A, or 19B (§§ 78.168, 78.169, 78.170, 78.185, 78.190, or 78.191 of this chapter). Wooden boxes. Gross weight not to exceed 150 pounds for spec. 19B boxes; 200 pounds for others. When spec. 15C boxes are used, devices must be packed in air-tight inside metal containers.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, provided that ends of boxes are reinforced to prevent penetration of spikes through the outside container when the completed package, prepared for shipment, is subjected to two drops from a height of 4 feet on a solid surface and so as to strike diagonally with the spikes in a downward position. Gross weight not to exceed 65 pounds, except that gross weight not to exceed 75 pounds is authorized in boxes made in accordance with § 78.205–24 (a) of this chapter.

(3) Spec. 29 (§ 78.226 of this chapter). Mailing tubes, provided the penetration of the spikes of fusees (flares or highway signals), through the outside container is prevented by one of the methods specified for fiberboard boxes, spec 12B (§ 78.205 of this chapter) in paragraph (b) (2) of this section. Gross weight not to exceed 5 pounds.

(4) Fusees, flares, pyrotechnic, or highway signals without spikes, or torches, pyrotechnic, when offered for shipment may be packed in containers prescribed in this paragraph, omitting the protection required for these articles when equipped with spikes.

(5) Fusees, flares, or highway signals may be packed with nonexplosive or nonflammable articles provided the outside packages are marked as prescribed in this section.

(c) Except as otherwise specified herein the gross weight of one outside package containing common fireworks must not exceed 100 pounds.

(d) Each outside package must be plainly marked in letters not less than 7/16 inch in height "COMMON FIREWORKS", "SIGNAL FLARES", "HAND SIGNAL DEVICES", "RAILWAY FUSEES", HIGHWAY FUSEES", "SMOKE SIGNALS", "SMOKE CANDLES", "SMOKE POTS", "SMOKE GRENADES", or "VERY SIGNAL CARTRIDGES", as the case may be, and with the additional words "HANDLE CAREFULLY—KEEP FIRE AWAY".

### § 73.109 Toy caps.

(a) Toy caps must be packed in containers complying with the following specifications:

(1) Spec. 15A, 15B, 16A, or 19A (§§ 78.168, 78.169, 78.185, or 78.190 of this chapter). Wooden boxes. Gross weight not to exceed 150 pounds.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes. Gross weight not to exceed 65 pounds.

(3) Toy caps, in addition to containers specified in subparagraphs (1) and (2) of this paragraph, may be transported in the package in which they are imported, provided the package consists of a wooden box, metal-lined, in good condition, and weighing not over 100 pounds gross. Inside packages must be as defined in § 73.100 (p).

(b) Toy caps may be packed with nonexplosive or nonflammable articles provided the outside containers are marked as prescribed herein.

(c) Toy paper caps of any kind must not be packed with fireworks.

(d) Each outside container must be plainly marked "TOY CAPS—HANDLE CAREFULLY".

### § 73.110 Charged oil well jet perforating guns, total explosive content in guns not exceeding 20 pounds per motor vehicle.

(a) Charged oil well jet perforating guns transported by motor vehicles operated by private carriers engaged in oil well operations in which the total weight of the explosive contents of shaped charges assembled to guns being transported does not exceed 20 pounds per such vehicle must be packed as prescribed in § 73.80 (b), (c), (d) and (e).

(b) Charged oil well jet perforating guns must not be offered for transportation or transported by carriers by rail freight, rail express, rail baggage, water, or by common or contract carriers by public highway.

### § 73.111 Cigarette loads, explosive auto alarms, toy propellant devices, toy smoke devices, trick matches, and trick noise makers, explosive.

(a) Cigarette loads, explosive auto alarms, toy propellant devices, toy smoke devices, trick matches, and trick noise makers, explosive must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 16A, or 19A (§ 78.168, § 78.169, §78.185, or § 78.190 of this chapter). Wooden boxes. Gross weight not to exceed 150 pounds.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes. Gross weight not to exceed 65 pounds.

(3) Each outside container must be plainly marked with the proper descriptive name and "HANDLE CAREFULLY".

### § 73.112 Oil well cartridges.

(a) Oil well cartridges must be so packed that the explosive composition does not exceed 20 grains per cubic inch of space in the outside shipping container and must be in specification containers as follows:

(1) Spec. 15A, 15B, 16A, or 19A (§ 78.168, § 78.169, § 78.185, or § 78.190 of this chapter). Wooden boxes. Gross weight not to exceed 150 pounds.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes. Gross weight not to exceed 65 pounds.

(3) Each outside container must be plainly marked with the name "Oil Well Cartridge" and "HANDLE CAREFULLY".

### § 73.113 Detonating fuzes, class C explosives.

(a) Detonating fuzes, class C explosives, must be packed in specification containers as follows:

(1) Spec. 12H (§ 78.209 of this chapter). Fiberboard boxes without liners, with well secured inside pasteboard cartons.

(2) In addition to specification containers prescribed in this section, detonating fuzes, class C explosive, may be packed in well secured strong, tight outside wooden or metal boxes. The gross weight of the outside wooden or metal box must not exceed 190 pounds.

(b) Each outside package must be plainly marked "DETONATING FUZES, CLASS C EXPLOSIVES—HANDLE CAREFULLY".

### § 73.114 Actuating cartridges, explosive, fire extinguisher or valve.

(a) Actuating cartridges, explosive, fire extinguisher or valve must be packed in strong wooden or fiberboard boxes.

(b) Each outside container must be plainly marked "ACTUATING CARTRIDGES, EXPLOSIVE, FIRE EXTINGUISHER — HANDLE CAREFULLY" or "ACTUATING CARTRIDGES, EXPLOSIVE, VALVE—HANDLE CAREFULLY".

(c) When shipped as components with fire extinguisher or with valve and with not more than 2 cartridges for each extinguisher or valve, they are exempt from Parts 71–78 of this chapter.

## Subpart C—Flammable Liquids; Definition and Preparation

### § 73.115 Flammable liquids; definition.

(a) A flammable liquid for the purpose of Parts 71–78 of this chapter is any liquid which gives off flammable vapors (as determined by flash point from Tagliabue's open-cup tester, as used for test of burning oils) at or below a temperature of 80° F.

(b) Flammable liquids are described as viscous flammable liquids (see § 73.119 (j)) when viscosity is determined by one of the following methods:

(1) The viscosity of the liquids must be determined in a Stormer viscosimeter with an actuating weight of 400 grams and with the liquid maintained at a temperature of 28° C. The cylinder of the viscosimeter must be immersed in the liquid.

(2) For transparent liquids the sample may be tested in a vertical glass tube, 1 inch inside diameter by approximately 13 inches long, having two marks 10 inches apart engraved thereon, the lower mark being 2 inches above the bottom of the tube; the liquid to be tested shall be poured into the tube until its surface rises one-half inch above the upper mark and must be maintained at a temperature of 28° C. during the test; a polished steel ball one-fourth inch in diameter shall be supported one-half inch above the surface of the liquid at the center of the tube and dropped therein.

(3) When the speed of the cylinder in the first test does not exceed 10 revolutions per 13 seconds, or the time required in the second test for the steel ball to fall the vertical distance between the two lines upon the glass tube is not less than 4 seconds the material is classed as "viscous."

### § 73.116 Outage.

(a) Outage for containers offered for transportation by carriers by rail freight, rail express, highway, or water, except as otherwise specifically provided in this part, must be as prescribed in paragraphs (b) to (h) of this section.

(b) Containers must not be entirely filled. Sufficient interior space must be left vacant to prevent leakage or distortion of containers due to the expansion of the contents from increase of temperature during transit. This outage must be calculated to the total capacity of the container.

(c) In packages containing alcohol, cologne spirits, high wines, or other distilled spirits of 150 proof or over, the vacant interior space must be the maximum permitted by the United States Internal Revenue regulations.

(d) Flammable liquids must not be loaded into domes of tank cars. If the dome of the tank car does not provide sufficient outage, then vacant space must be left in the shell to make up the required outage.

(e) Flammable liquids having vapor pressure of 16 pounds per square inch absolute at 100° F. or less must be so loaded in tank cars that the outage shall be not less than 2 percent.

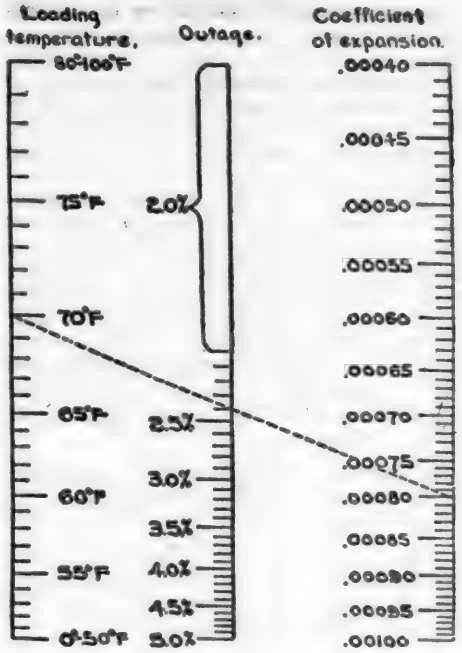
(f) Flammable liquids having a vapor pressure exceeding 16 pounds per square inch absolute at 100° F. for which minimum outage is not otherwise specifically provided herein, when loaded in uninsulated tank cars, must be so loaded that the minimum outage will be the greatest of the following values:

(1) Dome capacity.

(2) Two percent of total capacity of tank and dome.

(3) Outage as shown in paragraph (g) of this section.

(g) Outage chart for flammable liquids:




Example: Suppose the temperature of the liquid at time of loading is 70° F and its coefficient of expansion is 0.00080; lay a ruler on the chart running from 70° to 0.00080 as shown by the dotted line and the required outage is 2.4 percent where the ruler crosses the outage scale.

The following coefficients of expansion per degree Fahrenheit, of the principal flammable liquids shall be used in determining outages:

| | |
|---|---|
| Acetone | 0.00085 |
| Amyl acetate | .00068 |
| Benzol (benzene) | .00071 |
| Carbon bisulfide | .00070 |
| Ether | .00098 |
| Ethyl acetate | .00079 |
| Ethyl (grain) alcohol | .00062 |
| Methyl (wood) alcohol | .00072 |
| Toluol (toluene) | .00063 |
| Gasoline or naphtha: | |
| 50–55° A. P. I.[1] | .00055 |
| 55.1–60° A. P. I.[1] | .00060 |
| 60.1–65° A. P. I.[1] | .00065 |
| 65.1–70° A. P. I.[1] | .00070 |
| 70.1–75° A. P. I.[1] | .00075 |
| 75.1–80° A. P. I.[1] | .00080 |
| 80.1–85° A. P. I.[1] | .00085 |
| 85.1–90° A. P. I.[1] | .00090 |

[1] °A. P. I. (American Petroleum Institute), according to the following formula:

$$°A.P.I. = \frac{141.5}{\text{specific gravity}} - 131.5$$

(h) No cargo tank or compartment thereof used for the transportation of any flammable liquid shall be liquid full. The vacant space (outage) in a cargo tank or compartment thereof used in the transportation of flammable liquids shall be not less than 1 percent; sufficient space (outage) shall be left vacant in every case to prevent leakage from or distortion of such tank or compartment by expansion of the contents due to rise in temperature in transit.

### § 73.117 Closing and cushioning.

(a) All containers must be tightly and securely closed. Inside containers must be cushioned as prescribed, or in any case when necessary to prevent breakage or leakage.

### § 73.118 Exemptions for flammable liquids.

(a) Flammable liquids, except those for which no exemptions are provided as indicated by the "No exemption" statement in § 72.5 of this chapter are, unless otherwise provided, exempt from specification packaging, marking, and labeling requirements when packed in accordance with the following subparagraphs of this paragraph except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(1) In metal containers not over 1 quart capacity each, packed in strong outside containers.

(2) In containers having a capacity not over 1 pint or 16 ounces by weight each, packed in strong outside containers.

### § 73.119 Flammable liquids not specifically provided for.

(a) *Flammable liquids with flash point 20° F. or below.* Flammable liquids with flash point 20° F. or below and having vapor pressure (Reid[1] test) not over 16 pounds per square inch, absolute, at 100° F., other than those for which special requirements are prescribed in this part, must be prepared for shipment in specification containers of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein, as follows (see paragraphs (c) to (l) of this section for high pressure liquids, paragraphs (j) to (l) of this section for viscous liquids, and paragraph (m) of this section for flammable liquids which are also oxidizing materials or corrosive liquids):

(1) Spec. 1A, 1C, or 1D (§§ 78.1, 78.3, or 78.4 of this chapter). Carboys, glass, boxed or in barrels or kegs, capacity not over 5 gallons, except capacity not over 6.5 gallons authorized for Spec. 1D. Must be closed, and when reused must be reconditioned and tested, as provided in the specification.

(2) Spec. 5, 5A, 5B, 5C, or 5M (§§ 78.80, 78.81, 78.82, 78.83, or 78.90 of this chapter). Metal barrels or drums, with openings not exceeding 2.3 inches in diameter.

(3) Spec. 17E (§ 78.116 of this chapter). Metal drums (single-trip) not over 5 gallons capacity, with openings not over 2.3 inches in diameter. (See also paragraph (a)(16) of this section.)

(4) Spec. 17C (§ 78.115 of this chapter). Metal drums (single-trip), with openings not exceeding 2.3 inches in diameter.

(5) Spec. 10A (§ 78.155 of this chapter). Wooden barrels or kegs.

(6) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs with inside containers which must be glass or earthenware, not over 1 gallon each; metal pails, kits, or cans, not over 2 gallons each.

(7) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside con-

[1] American Society for Testing Materials Method of Test for Vapor Pressure of Petroleum Products (D–323).

tainers which must be glass or earthenware, not over 1 quart each; metal cans, not over 1 gallon each.

NOTE 1: Spec. 12B fiberboard boxes (§ 78.205–26(a) of this chapter), with one inside rectangular metal can, spec. 2F (§ 78.25 of this chapter) not to exceed 5 gallons capacity, are authorized for gasoline only. Gross weight of completed package not over 65 pounds.

(8) Spec. 15A, 15B, 15C, 16A, 19A, or 19B (§§ 78.168, 78.169, 78.170, 78.185, 78.190, or 78.191 of this chapter). Wooden boxes with inside containers which must be metal pails, kits, or cans, not over 10 gallons each or inside glass or earthenware containers not over 1 gallon each, except that glass or earthenware containers up to 3 gallons each are authorized when only one inside container is packed in each outside container.

(9) Spec. 21C, 22A or 22B (§ 78.224, § 78.196 or § 78.197 of this chapter). Fiber drums and plywood drums with a single inside glass, earthenware, or metal container of not over one gallon capacity in each drum. Inside container must be so cushioned at top, sides, and bottom, as to prevent breakage or leakage in transit.

(10) Spec. 42B, 42C, or 42H (§ 78.107, 78.108, or 78.112 of this chapter). Aluminum barrels or drums.

(11) Cylinders as prescribed for any compressed gas, except acetylene.

(12) Spec. 103,[2] 103–W, 103AL–W, 103D–W, 104,[2] 104–W, 105A100,[2] 105A-100AL–W 105A100–W, 106A500,[2] 106A-500–X, 106A800–X–NC, 106A800–NCI,[2] 110A500–W, 111A60AL–W, 111A60–F–1, 111A60–W–1, 111A100–W–3, 111A100–W–4, 111A100–W–6, 112A200–W, 112A400–F, 114A340–W, ARA–II,[2] ARA–III,[2] ARA–IV,[2] or ARA–IV–A[2] (§§ 79.100, 79.101, 79.200, 79.201, 79.300, and 79.301 of this chapter). Tank cars. For cars equipped with expansion domes, manway closures must be so designed that pressure will be released automatically by starting the operation of removing the manway cover. Openings in tank heads to facilitate application of lining are authorized and must be closed in an approved manner. (See § 73.432 for shipping instructions.)

(13) The use of spec. 103AL special riveted aluminum tank cars is authorized for the transportation of gasoline, ethyl acetate, acetone, methanol, or butyraldehyde as provided in special orders of November 5, 1937 and February 1, 1939.

(14) Spec. 15X (§ 78.181 of this chapter). Wooden boxes with inside metal containers. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(15) Spec. 17X (§ 78.119 of this chapter). Metal drums (single-trip). For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(16) Spec. 17E (§ 78.116 of this chapter). Metal drums (single-trip), not over 55 gallons capacity, not less than full 19 gauge body and head sheets for not over 30-gallon drums, and not less than full 18 gauge body and head sheets for not over 55-gallon drums, with openings not exceeding 2.3 inches in diameter. When transported by rail or highway, authorized only for carload and truckload shipments.

NOTE 1: Because of the present emergency and until further order of the Commission, l. c. l. and l. t. l. shipments will be permitted.

(17) Spec. MC 300, MC 301,[2] MC 302, MC 303, MC 304, or MC 305, (§ 78.321, 78.323, 78.324, 78.325, or 78.326 of this chapter). Tank motor vehicles.

NOTE 1: Compartmented tank motor vehicles having compartments not equipped with emergency valves or baffles are authorized provided compartments used for dangerous articles are so equipped when required by the specification and provided each compartment not so equipped is plainly marked near the manhole "This compartment not to be used for flammable liquids".

(18) The use of existing tank cars constructed to specifications Emergency USG–A,[2] USG–B,[2] or USG–C[2] in effect prior to June 4, 1956 is authorized for the transportation of liquids weighing not over 8 pounds per gallon, and having vapor pressures not exceeding 16 pounds per square inch, absolute, at 100° F.

(19) Spec. 5L (§ 78.89 of this chapter) Metal barrels or drums for gasoline shipments offered by or consigned to the Departments of the Army, Navy, and Air Force of the United States Government or Allies. Use of this container will be permitted because of the present emergency and until further order of the Commission.

(20) Spec. 12D (§ 78.207 of this chapter). Fiberboard boxes with inside containers which must be glass or earthenware not over one gallon each; authorized for not more than 75 pounds gross weight; not to contain more than 4 such inside containers if their capacity is greater than 5 pints each. Use of this container will be permitted because of the present emergency and until further order of the Commission.

(21) Gasoline samples in boxes of metal not lighter than 20 gauge, United States standard, having hinged cover securely closed, and containing not more than 5 inside rectangular metal cans with screw cap closure, each having a capacity not to exceed ½ gallon, may be shipped when consigned to state laboratories for examination.

(22) Spec. 17H or 37A (§§ 78.118 or 78.131 of this chapter). Metal drums with inside glass containers not over 9 pints capacity each. Inside containers may contain biological materials.

(23) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes, with inside glass bottles not over 1 gallon capacity each. Not more than four inside containers exceeding 5 pints capacity each shall be packed in the outside container. Shipper must have established that the completed package meets test requirement prescribed by § 78.210–10 of this chapter.

(24) Spec. 6D (§ 78.102 of this chapter). Cylindrical steel overpack with inside spec. 2S (§ 78.35 of this chapter) polyethylene container.

(25) Spec. 51 (§ 78.245 of this chapter). Portable tanks.

(b) *Flammable liquids with flash point above 20° F. to 80° F.* Flammable liquids with flash point above 20° F. to 80° F. and having vapor pressure (Reid[1] test) not over 16 pounds per square inch, absolute, at 100° F., other than those for which special requirements are prescribed in this part, must be prepared for shipment in specification containers of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein, as follows (see paragraphs (c) to (l) of this section for high pressure liquids and paragraph (m) of this section for flammable liquids which are also oxidizing materials or corrosive liquids):

(1) Containers as specified in paragraph (a) of this section, except that openings greater than 2.3 inches in diameter in barrels and drums are authorized when permitted by the specification, and also the following:

(2) Spec. 17E or 17H (§§ 78.116 or 78.118 of this chapter). Metal drums (single-trip).

(3) Spec. 10B (§ 78.156 of this chapter), wooden barrels or kegs.

NOTE 1: Because of the present emergency and until further order of the Commission, wooden whiskey barrels, properly recoopered, which comply with all the provisions of spec. 10B (§ 78.156 of this chapter), are also authorized. Marking is required on the head of each container, by the reconditioner, by hot branding or legible stenciling, as follows: ICC–10B.

Name or symbol (letters) of reconditioner; this must be registered with the Bureau of Explosives and located just above, below, or following the mark ICC–10B.

Size of marking (minimum) ¾ inch high.

(4) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers which must be glass, earthenware, polyethylene (bags are not authorized), or metal, not over 1 gallon each. Packages containing inside glass or earthenware containers must not contain more than 4 such inside containers if their capacity is greater than 5 pints each. Polyethylene containers are authorized only for materials that will not react with or cause decomposition of the plastic.

NOTE 1: Because of the present emergency and until further order of the Commission, fiberboard boxes, spec. 12B (§ 78.205–26 (a) of this chapter), with one inside rectangular metal can, spec. 2F (§ 78.25 of this chapter), not to exceed 5 gallons capacity, are author-

[2] Use of existing tank cars authorized, but new construction not authorized.

[2] Use of existing cargo tanks authorized, but new construction not authorized.

[1] American Society for Testing Materials. Method of Test for Vapor Pressure of Petroleum Products (D–323).

ized. Gross weight of completed package not over 65 pounds.

(5) Spec. 12E (§ 78.208 of this chapter). Fiberboard box with 1 or 2 rectangular metal inside containers of not over 5 gallons capacity each.

(6) Spec. 6K (§ 78.101 of this chapter). Metal barrels or drums which must be constructed of Type 304 stainless steel, having heads with minimum convexity of 5/8 inch welded to the body, and be equipped at both heads with 12 gauge chime reinforcements. Body seams shall be welded. Drums shall be equipped with I-bar rolling hoops.

(7) Spec. 37P (§ 78.133 of this chapter). Steel drums with polyethylene liner (nonreusable container). Authorized only for materials that will not react with polyethylene and result in container failure.

(8) Spec. 6D or 37M (nonreusable container) (§ 78.102 or 78.134 of this chapter). Cylindrical steel overpacks with inside spec. 2SL (§ 78.35a of this chapter) polyethylene container. Authorized only for materials that will not react with polyethylene and result in container failure.

(9) Spec. 21C (§ 78.224 of this chapter). Fiber drum with inside spec. 2S or 2SL (§ 78.35 or § 78.35a of this chapter) polyethylene container. Authorized only for materials that will not react with polyethylene and result in container failure. (See § 78.224–1(a)(2) of this chapter.)

(c) *Flammable liquids for which other special packing requirements are not prescribed.* Flammable liquids for which other special packing requirements are not prescribed in this part, must be shipped, depending upon their Reid[1] vapor pressures as prescribed in paragraphs (d) to (i) of this section.

(d) *When the vapor pressure does not exceed 16 pounds per square inch, absolute, at 100° F.* When the vapor pressure does not exceed 16 pounds per square inch, absolute, at 100° F., as prescribed in paragraphs (a) and (b) of this section.

(e) *When the vapor pressure exceeds 16 pounds per square inch, absolute, at 100° F.* When the vapor pressure exceeds 16 pounds per square inch, absolute, at 100° F., but does not exceed 27 pounds per square inch, absolute, at 100° F., flammable liquids must be packed in specification containers as follows:

(1) As prescribed in paragraph (a) (1) to (11) of this section, except specs. 10A and 17E (§§ 78.155 and 78.116 of this chapter). Bung labels required, for metal barrels and drums, as prescribed in paragraph (i) of this section.

(2) Spec. 103,[2] 103–W, 103AL–W, 103D–W, 104,[2] 104–W, 105A100,[2] 105A100AL–W, 105A100–W, 106A500,[2] 106A500–X, 106A-800–X–NC, 106A800–NCI,[2] 110A500–W, 111A60AL–W, 111A60–F–1, 111A60–W–1, 111A100–W–3, 111A100–W–4, 111A100–W–6, 112A200–W, 112A400–F, 114A340–W, ARA–II,[2] ARA–III,[2] ARA–IV,[2] or ARA–IV–A[2] (§§ 79.100, 79.101, 79.200, 79.201, 79.300, and 79.301 of this chapter). Tank cars. Cars having expansion domes must be equipped with manway closures, identification marks, and dome placards as prescribed in (f)(4), (g), (h), and (h)(1) of this section. Openings in tank heads to facilitate application of lining are authorized and must be closed in an approved manner. (See Note 1 of paragraph (f)(3) of this section.)

(3) Spec. MC 300, MC 301,[2] MC 302, MC 303, MC 304, or MC 305 (§ 78.321, 78.323, 78.324, 78.325, or 78.326 of this chapter). Tank motor vehicles.

(4) Spec. 51 (§ 78.245 of this chapter). Portable tanks.

(f) *When the vapor pressure exceeds 27 pounds per square inch, absolute, at 100° F.* When the vapor pressure exceeds 27 pounds per square inch, absolute, at 100° F., but does not exceed 40 pounds per square inch (see note 2), absolute, at 100° F., flammable liquids must be packed in specification containers as follows:

(1) Spec. 5, 5A, or 5P (§ 78.80, 78.81, or 78.92 of this chapter). Metal barrels or drums, with openings not exceeding 2.3 inches in diameter. Bung labels required as prescribed in paragraph (i) of this section.

(2) Cylinders as prescribed for any compressed gas except acetylene.

(3) Spec. 105A100,[2] 105A100AL–W, 105A100–W, 106A500,[2] 106A500–X, 106A 800–X–NC, 106A800–NCI,[2] 110A500–W, 111A100–W–4, 112A200–W, 112A400–F, 114A340–W, or ARA–IV–A,[2] (§§ 79.100, 79.101, 79.200, 79.201, 79.300, 79.301 of this chapter) or (see Note 1 of this subparagraph). Tank cars. Spec. 104,[1] 104–W, 111A100–W–3 and ARA–IV[1] (§§ 79.200, 79.201 of this chapter) tank cars are authorized under the conditions prescribed in paragraphs (f)(4), (g), (h), and (h)(1) of this section and Note 3 of this subparagraph. Openings in tank heads to facilitate application of lining are authorized and must be closed in an approved manner.

NOTE 1: Tanks built in compliance with American Railway Association specifications for class IV–A[1] tank cars authorized for use effective October 1, 1925, may be continued in service for the transportation of ethyl chloride and other liquids which do not have a vapor pressure exceeding 28 pounds per square inch, gauge pressure, at 100 F, provided there is stenciled on each side of the tank immediately below the valve protecting housing the words "Liquids having vapor pressure exceeding 28 pounds per square inch at 100 F. must not be loaded into this tank" in letters and figures at least 1 inch high. These tank cars must be retested as prescribed in current spec. 105A100–W except that safety valves must open at pressure not exceeding 35 pounds, and be vapor tight at 28 pounds per square inch.

NOTE 3: Spec. 104[1] or 104–W or ARA–IV[1] tank cars are authorized provided that they are equipped with approved fittings designed to provide for the loading, unloading, gauging, sampling, and taking temperature of the contents without removing the manway closure; that safety valves are set to open at pressure of 35 pounds (with a tolerance of plus or minus 3 pounds), and are vapor tight at 28 pounds per square inch gauge pressure; that bottom discharge outlets are of the same type as authorized for specification 104[1] or 104–W tank cars; and that there is stenciled on each side of the tank above the specification mark, in letters and figures at least 1 inch high, "For vapor pressures not exceeding 40 pounds per square inch, absolute, at 100 F." Because of the present emergency and until further order of the Commission, spec. ICC–104[1] or 104–W tank cars, equipped with safety valves set to open at pressure of 35 pounds (with a tolerance of plus or minus 3 pounds) and which are vapor tight at 28 pounds per square inch, gauge pressure, are authorized provided that they are stenciled as required above.

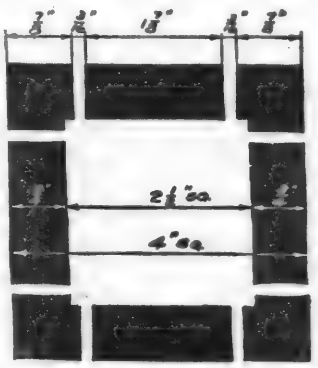
(4) Spec. 103,[1] 103–W, 103AL–W, 104,[1] 104–W, 111A60AL–W, 111A60–F–1, 111A60–W–1, ARA–II,[1] ARA–III,[1] or ARA–IV[1] (§§ 79.200, 79.201 of this chapter). Tank cars. Cars must have their manway closures equipped with approved safeguards making removal of closures from manway openings practically impossible while car interior is subjected to vapor pressure of lading. These cars must be stenciled on each side of domes in line with the ladders, and in a color contrasting to the color of the dome, with the identification mark as prescribed in paragraph (g) of this section.

(5) Spec. MC 304 (§ 78.325 of this chapter). Tank motor vehicle.

(6) Spec. 51 (§ 78.245 of this chapter). Portable tanks.

(g) *Manhole closure identification mark.*

(Reduced size)




(h) *Dome placards.* Spec. 103,[1] 103AL–W, 103–W, 104,[1] 104–W, 111A60AL–W, 111A60–F–1, 111A60–W–1, ARA–II,[1] ARA–III,[1] or ARA–IV[1] (§§ 79.200, 79.201 of this chapter). Tank cars. Cars loaded with materials described in paragraphs (e) and (f) of this section must, in addition to the "Dangerous" placards, be protected by special dome placards, at least 4⅛ by 10⅞ inches, with legible wording as follows:

DOME PLACARD

(Reduced Size)

(Black printing on white)

NOTE 1: For tank car equipped with both inner and outer manhole covers, and when removal of inner cover is not necessary to unload the car, the word "inner" may be

[1] American Society for Testing Materials. Method of Test for Vapor Pressure of Petroleum Products (D–323).

[2] Use of existing tanks cars authorized, but new construction not authorized.

[2] Use of existing cargo tanks authorized, but new construction not authorized.

substituted for the word "this" in the dome placard.

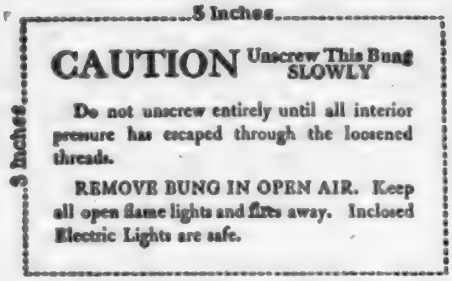
(1) Dome placards must be applied one on each side of dome and one on the top near the manhole in line with the ladders. Dome placards may be of white paper securely pasted to the dome, or of strong tag board for use in suitable holders; or the wording of the dome placard may be stenciled on the dome of car and remain thereon as long as it is used in the service which requires these special placards.

(i) *Bung label.* Flammable liquids as described in paragraphs (e) and (f) of this section, shipped in metal drums or barrels, in addition to the standard red caution label prescribed in § 73.405, must be labeled near the bung with a white rectangular label or tag measuring 5 by 3 inches, bearing the following wording:

BUNG LABEL

(Reduced Size)

(Black printing on white)


5 Inches
3 Inches
CAUTION
Unscrew This Bung SLOWLY
Do not unscrew entirely until all interior pressure has escaped through the loosened threads.
REMOVE BUNG IN OPEN AIR. Keep all open flame lights and fires away. Inclosed Electric Lights are safe.

(j) *Viscous flammable liquids.* Flammable liquids having a viscosity as determined by one of the methods prescribed in § 73.115 (b) must be shipped in specification containers as prescribed in paragraph (k) or (l) of this section.

(k) *Viscous flammable liquids having a vapor pressure which does not exceed 16 pounds per square inch, absolute, at 100° F.* (See paragraphs (c) to (i) of this section for higher pressure liquids) must be prepared for shipment in containers as follows:

(1) As prescribed in paragraphs (a) or (b) of this section, irrespective of flash point.

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(3) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter). Metal drums (single-trip) not over 5 gallons with welded side seams.

(4) Spec. 42F (§ 78.110 of this chapter). Aluminum barrels or drums.

(l) *Viscous flammable liquids with flash point above 20° F. to 80° F. and having a vapor pressure which does not exceed 18 pounds per square inch, absolute, at 100° F.* Viscous flammable liquids with flash point above 20° F. to 80° F. and having a vapor pressure which does not exceed 18 pounds per square inch, absolute, at 100° F. must be prepared for shipment in containers as follows:

(1) As prescribed in paragraphs (e) to (i) of this section.

(2) Spec. 17E or 17H (§ 78.116 or 78.118 of this chapter). Metal drums (single-trip).

(m) *Flammable liquids which are also oxidizing materials or corrosive liquids.* Flammable liquids which are also oxidizing materials or corrosive liquids as defined in §§ 73.151 and 73.240 must be packed as follows:

(1) Spec. 1A, 1D, or 1EX (single-trip) (§ 78.1, 78.4, or 78.6 of this chapter). Glass carboys, boxed or in plywood drums, capacity not over 5 gallons for spec. 1A.

(2) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers which must be glass or earthenware, not over 1 gallon each, cushioned with incombustible packing material in sufficient quantity to absorb the contents of the inner container.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers which must be glass or earthenware, not over 1 quart each, cushioned with incombustible packing material in sufficient quantity to absorb the contents of the inner container.

(4) Spec. 5, 5A, 5B, 5C, 17C (single-trip), or 17E (single-trip) (§ 78.80, 78.81, 78.82, 78.83, 78.115 or 78.116 of this chapter). Metal barrels or drums not over 16 gallons capacity. Authorized only for materials which will not react dangerously with the drum metal, or be decomposed by contact with it.

(5) Spec. 37P (§ 78.133 of this chapter). Steel drums, not over 5-gallons capacity, with polyethylene liner (nonreusable container). Drums exceeding 1 gallon capacity must be constructed of at least 24-gauge metal. Authorized only for materials that will not react with polyethylene and result in container failure.

(6) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside polyethylene bottles not over 1-gallon capacity each. Not more than four 1-gallon polyethylene bottles shall be packed in one outside fiberboard box. Authorized only for material which will not react dangerously with or cause decomposition of polyethylene.

(7) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with one inside polyethylene bottle not over 5-gallons capacity, as specified by § 78.205–34 of this chapter. Authorized only for material which will not react dangerously with or cause decomposition of polyethylene.

(8) Spec. 12P (§ 78.211 of this chapter). Fiberboard boxes with inside spec. 2U (§ 78.24 of this chapter) polyethylene containers not over 5 gallons capacity each. Authorized only for material which will not react dangerously with or cause decomposition of polyethylene.

**§ 73.120 Automobiles, motorcycles, tractors, or other self-propelled vehicles.**

(a) Automobiles, motorcycles, tractors, or other self-propelled vehicles, equipped with gasoline or other fuel tanks, provided such tanks are securely closed are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter. When offered for transportation by carriers by rail freight or highway, drainage of fuel tanks is not required. When offered for transportation by rail express, fuel tanks must have been drained and securely closed.

(b) *Engines or motors (internal combustion).* Engines or motors (internal combustion) employing liquid fuel classed as flammable liquid in this chapter, whether shipped separately or as a part of other apparatus, unless specifically exempt in paragraph (a) of this section, must have their fuel tanks completely drained. Fuel may be left in the carburetor, fuel pump, and fuel lines provided the total flammable fuel content does not exceed 16 ounces and provided the lines are tightly closed to prevent leakage of the fuel.

(c) *Truck bodies or trailers on flat cars.* Truck bodies or trailers with automatic heating or refrigerating equipment of the flammable liquid type may be shipped with fuel tanks filled and equipment operating or inoperative, when used for the transportation of other freight and loaded on flat cars as part of a joint rail-highway movement, provided the equipment and fuel supply are of a type approved by the Bureau of Explosives. The heating or refrigerating units are exempt from specification packaging, marking, and labeling requirements in this service and shall be considered as carriers equipment but not as shipments.

**§ 73.121 Carbon bisulfide (disulfide).**

(a) Carbon bisulfide must be packed in specification containers as follows:

(1) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs with glass, earthenware, or metal inside containers not over 5 pints capacity each.

(2) Spec. 12A or 12B (§ 78.210 or 78.205 of this chapter). Fiberboard boxes with inside containers which must be glass or earthenware, not over 1 pint each, or metal cans, not over 1 quart each. Outside containers not to exceed 65 pounds gross weight.

(3) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside metal containers, spec. 2A (§ 78.20 of this chapter); or with inside glass or earthenware containers not over 5 pints capacity each.

(4) Spec. 17E (§ 78.116 of this chapter). Metal drums (single-trip) not over 5 gallons capacity each, with openings not exceeding 2.3 inches in diameter.

(5) Spec. 5, 5A, or 17C (single-trip) (§§ 78.80, 78.81, or 78.115 of this chapter). Metal barrels or drums not over 55 gallons capacity each, with openings not exceeding 2.3 inches in diameter.

(6) Tank cars as prescribed in § 73.119 (a) (12). (See § 73.432 for shipping instructions.)

(b) Carbon bisulfide (disulfide) must not be offered for transportation by rail express.

§ 73.122 Acrolein, inhibited.

(a) Acrolein must be inhibited and when offered for transportation by carriers by rail freight, highway, or water must be packed in specification containers as follows:

(1) Spec. 5, 5A, or 5B (§ 78.80, 78.81, or 78.82 of this chapter). Metal drums not over 55 gallons capacity each. Spec. 5 or 5B drums must have no opening exceeding 2.3 inches in diameter.

(2) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside metal containers, spec. 2A (§ 78.20 of this chapter), not over 5 gallons capacity each.

(3) Spec. 105A500W (§ 78.288 of this chapter) tank cars, which must be stenciled near the specification number "For Acrolein Only".

NOTE 1: Spec. 105A500–W and 105A600–W (§§ 78.288 and 78.289 of this chapter) tank cars stenciled 105A200–W or 105A300–W (§§ 78.307, 78.286 of this chapter) may be used.

(4) Spec. 17C (§ 78.115 of this chapter). Metal drums (single-trip) with chime reinforcement for bottom head chime seam and having fixed heads, not over 55 gallons capacity. The openings shall be located in one head and shall not exceed 2.3" in diameter.

(b) Acrolein must be inhibited and when offered for transportation by rail express must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, 19A, or 12B (§ 78.168, § 78.169, § 78.170, § 78.185, § 78.190, or § 78.205 of this chapter). Wooden or fiberboard boxes having not more than one inside container of glass not exceeding one quart capacity, securely cushioned within a metal container.

§ 73.123 Ethyl chloride.

(a) Ethyl chloride must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass, earthenware, or metal inside containers not over 1 pound capacity each.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with glass, earthenware, or metal inside containers not over 1 pound capacity each. Outside containers not to exceed 65 pounds gross weight.

(3) Spec. 5A (§ 78.81 of this chapter). Metal barrels or drums not over 33 gallons capacity each.

(4) Cylinders as prescribed for any compressed gas, except acetylene.

(5) Spec. 105A100,[1] 105A100–W, 111A100–W–4, 112A200–W, 112A400–F, or ARA–IV–A[1] (§§ 79.100, 79.101 of this chapter). Tank cars. See Note 1 of § 73.119(f)(3). (See § 73.432 for shipping instructions.)

(6) Spec. MC330 (§ 78.336 of this chapter). Tank motor vehicle.

(b) Outage for all containers except lagged tank cars, must be 7.5 percent or more at 70° F. For lagged tank cars, 4 percent or more at 70° F.

[1] The use of existing tank cars authorized, but new construction not authorized.

§ 73.124 Ethylene oxide.

(a) Ethylene oxide must be packed in specification containers as follows and copper or copper bearing alloys shall not be used in any part of a container, container valve or other container appurtenance if that part is normally in contact with ethylene oxide liquid or vapor.

(1) Spec. 15A, 15B, 15C, or 16A (§§ 78.168, 78.169, 78.170, or 78.185 of this chapter) wooden boxes and Spec. 12B (§ 78.205 of this chapter) fiberboard boxes, with metal inside containers not over 12-ounce capacity each. Each inside container must have a minimum bursting strength of 180 psig as prepared for shipment and be provided with a safety vent having a minimum diameter of 0.1023 inch and closed with fusible metal having a yield temperature of 157 to 170° F. The safety vent opening shall be hot tinned before filling with fusible metal. Filling shall be such that the container will not be liquid full below 185° F. Each inside container must be completely insulated, except for top closure, with two coats of heat-retardant paint, of type approved by the Bureau of Explosives, applied over suitable primer and finished with suitable waterproof paint; or with other equally efficient insulation approved by the Bureau of Explosives. Not more than 12 inside containers nor more than one layer of containers may be packed in one outside container.

(2) Cylinders as prescribed for any compressed gas, except acetylene, not exceeding 30 gallons water capacity nominal, which meet the following requirements. All cylinders shall be seamless or steel welded. Cylinders shall be equipped with safety devices of the fusible plug type with threaded straight bore orifice, with yield temperature of 157 to 170° F. having a minimum vent area of 0.0055 square inch per pound of water capacity of the container for containers not over one gallon capacity and 0.0012 square inch per pound of water capacity of the container for all containers over one gallon capacity. Each cylinder must be tested for leakage at a pressure of at least 15 p. s. i. gauge with an inert gas before each refilling. Filling shall be such that the container will not be liquid full at 185° F. Pressurizing valves and eductor tubes must be provided for all containers over one gallon capacity. Cylinders having a water capacity in excess of one gallon shall be insulated with three coats of heat-retardant paint, of type approved by the Bureau of Explosives, applied over suitable primer and finished with suitable waterproof paint; or with other equally efficient insulation approved by the Bureau of Explosives.

(3) In addition to specification containers prescribed in this section, ethylene oxide may be shipped when packed in strong incombustible outside containers, with inside containers which must be securely sealed glass ampules or vials, contents not over 100 grams each, cushioned in vermiculite or equally efficient incombustible cushioning material. Not more than 100 grams of ethylene oxide shall be packed in any such outside container.

(4) Spec. 5P. Lagged steel drums not over 61 gallons capacity each. Drums must be equipped with safety devices of the fusible plug type with threaded straight bore orifice, with yield temperature of 157 to 170° F. having a minimum vent area of 0.0055 square inch per pound of water capacity of the container for containers not over 1 gallon capacity and 0.0012 square inch per pound of water capacity of the container for all containers over one gallon capacity. Each drum must be tested for leakage at a pressure of at least 15 p. s. i. gauge with an inert gas before each refilling; top head of each drum must be plainly marked with paint "Keep This End Up." Filling shall be such that the container will not be liquid full below 185° F. and the maximum filling for 61 gallon drums must not exceed 55 gallons of ethylene oxide at 60° F.

(5) Spec. 105A100,[1] 105A100–W, 111A100–W–4, or ARA–IV–A[1] (§§ 79.100, 79.101, 19.200, 79.201 of this chapter). Tank cars. Spec. 105A200–W, 105A300–W, 105A400–W, 105A500–W and 105A600–W (§§ 79.100, 79.101 of this chapter) must be restenciled 105A100–W and be equipped with safety valves of the type and size used on spec. 105A100–W tank cars. Openings in tank heads to facilitate application of nickel lining are authorized and must be closed in an approved manner. See Note 1 of § 73.119 (f)(3). (See § 73.432 for shipping instructions.)

NOTE 1: Because of the present emergency and until further order of the Commission, specification ARA–IV[1] and ICC–104[1] and 104–W (§§ 79.200, 79.201, of this chapter) tank cars, converted as follows, are authorized for use. Tanks must be tested to 75 pounds per square inch hydrostatic pressure and show no leakage with lagging removed. Bottom discharge outlet must be removed, the opening closed with a riveted plate, and a sump applied. Safety valves must be removed and replaced by two safety valves of the type and size used on ICC–105A100[1] or 105A100–W (§§ 79.100, 79.101 of this chapter) tank cars but set to open at 60 pounds per square inch instead of 75 pounds. The various approved dome fittings now required on ICC–105A100[1] or 105A100–W tank cars, must be installed in an approved manner to provide for the loading, unloading, guaging, sampling, and taking of temperature of contents without removing the manway closure. Tank jacket must be stenciled immediately above the mark ARA–IV,[1] ICC–104,[1] or ICC–104–W with the words "For Ethylene Oxide Only."

(b) Outage must be sufficient to prevent tank car from becoming entirely filled with liquid at 105° F.

§ 73.125 Alcohol.

(a) Alcohol must be packed as follows:

(1) In containers as prescribed in § 73.119 (a) and (b).

(2) Securely closed metal tanks of not exceeding 16 gallons capacity, made of metal not lighter than 20 gauge, United States standard, packed in strong outside wooden boxes, may be used for the transportation of natural history or laboratory specimens preserved in alcohol, when shipped by or for the United States Government.

[1] Use of existing tank cars authorized, but new construction not authorized.

(3) Spec. 12B (§ 78.205 of this chapter) fiberboard boxes. Because of the present emergency and until further order of the Commission, inside glass containers not over 1.21 gallons capacity each are authorized when only one inside container is packed in each outside container.

(4) Because of the present emergency and until further order of the Commission, existing tank cars complying with spec. 103,[1] 103–W, ARA–III,[1] AAR 203,[1] or AAR 203–W[1] (§§ 79.200, 79.201 of this chapter), previously used for the transportation of wine, are authorized when stenciled "Alcohol Only" and equipped with safety valves of the type required on spec. 103[1] tank cars.

(5) Spec. 6D (§ 78.102 of this chapter). Cylindrical steel overpack with inside spec. 2S (§ 78.35 of this chapter) polyethylene container.

(6) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside polyethylene bottles, not over 1-gallon capacity each, suitably cushioned to prevent movement within the box.

(7) Spec. 12P (§ 78.211 of this chapter). Fiberboard boxes with inside spec. 2U (§ 78.24 of this chapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures.

### § 73.126 Nickel carbonyl.

(a) Nickel carbonyl must be packed in specification cylinders as prescribed for any compressed gas, except acetylene. Cylinders used exclusively for nickel carbonyl may be given a complete external visual inspection at the time periodic retest becomes due in lieu of the interior hydrostatic pressure test required by § 73.34 (j). Visual inspection shall be in accordance with Compressed Gas Association's "Standards for Visual Inspection of Compressed Gas Cylinders"[2] 1959 edition.

(b) Nickel carbonyl must not be offered for transportation by rail express.

### § 73.127 Nitrocellulose or collodion cotton, fibrous or nitrostarch, wet; nitrocellulose flakes; colloided nitrocellulose, granular, flake, or block, and lacquer base or lacquer chips, wet.

(a) Nitrocellulose, fibrous, wet with alcohol or solvent, must contain at least 25 percent by weight of alcohol or a solvent with flash point not lower than 30° F.; collodion cotton, fibrous and nitrostarch, wet with alcohol or a solvent, must contain at least 30 percent by weight of alcohol or a solvent with flash point not lower than 30° F.; nitrocellulose flakes; colloided nitrocellulose, granular or flake; lacquer base or lacquer chips, wet with alcohol or a solvent, must contain at least 20 percent by weight of alcohol or a solvent with flash point not lower than 30° F., and nitrocellulose blocks wet with alcohol must contain at least 25 percent by weight of alcohol and must be packed in specification containers as follows:

(1) Containers, except cargo tanks or tank cars, as prescribed in § 73.119.

(2) Spec. 6A, 6B, 6C, or 6J (§ 78.97, § 78.98, § 78.99, or § 78.100 of this chapter). Metal barrels or drums not over 55 gallons capacity. Spec. 6J (§ 78.100 of this chapter) drums must have removable heads of 14 gauge metal or 16 gauge metal with one or more corrugations near the periphery and heads must have a minimum convexity of 3/8 inch; each drum must have three rolled or swedged-in hoops, one of which shall be in the body near the curl.

(3) Spec. 42F (§ 78.110 of this chapter). Aluminum barrels or drums. Authorized only for nitrocellulose or collodion cotton, fibrous, wet, or colloided nitrocellulose, granular or flake, wet.

(4) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter). Metal barrels or drums.

(5) Spec. 6J (§ 78.100 of this chapter). Metal drums. Authorized only for nitrocellulose in solid block forms and wet with alcohol to not less than 25 percent by weight. Authorized only for carload or truckload shipments.

(b) Except for spec. 37A which is limited to 480 pounds, gross weight of any container must not exceed 490 pounds.

### § 73.128 Paints and related materials.

(a) Paint, enamel, lacquer, stain, shellac, varnish, aluminum, bronze, gold, wood filler, liquid, and lacquer base liquid, and thinning, reducing and removing compounds therefor, and driers, liquid, therefor, must be packed in specification containers as follows:

(1) As prescribed in § 73.119, according to flash point, pressure, or viscosity.

(2) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter). Metal drums (single-trip) not over 5 gallons capacity with welded side seams for drums over 2 gallons capacity, irrespective of flash point or viscosity. Spec. 37A metal drums constructed with 26-gauge body sheets, 24-gauge removable heads, and 26-gauge bottom heads are authorized for not over 80 pounds gross weight. Because of the present emergency and until further order of the Commission, spec. 37A or 37B metal drums of 8½ gallons capacity, with welded side seams and made of 24-gauge metal, are authorized provided flash point of material shipped is above 20° F.

(3) Spec. 52 (§78.246 of this chapter). Aluminum or magnesium portable tanks.

(4) Spec. 37C (§ 78.135 of this chapter). Metal drums (non-reusable containers) not over 5 gallons capacity each. Authorized only for materials having flash point above 20 F.

(b) Paint, enamel, lacquer, stain, shellac, varnish, aluminum, bronze, gold, wood filler, liquid, and lacquer base liquid, and thinning, reducing and removing compounds therefor, and driers, liquid, therefor, with flash point above 20° F., may, in addition to containers prescribed in paragraph (a) of this section, be shipped in specification containers as follows:

(1) Spec. 10C (§ 78.157 of this chapter). Wooden barrels or kegs.

(c) Paint, enamel, lacquer, stain, shellac, varnish, aluminum, bronze, gold, wood filler, liquid, and lacquer base liquid, and thinning, reducing and removing compounds therefor, and driers, liquid, therefor, in glass or earthenware containers of not over 1 quart capacity each, or metal containers of not over 5 gallons capacity each, packed in strong outside containers are exempt from specification packaging, marking, and labeling requirements when offered for transportation by rail freight, highway, or water except when offered for transportation by carrier by water, name of contents must be marked on outside container. Shipments for transportation by highway carriers are exempt also from Part 77, except § 77.817, and Part 197 of this chapter. When offered for transportation by rail express, such shipments are exempt from specification packaging, marking, and labeling requirements, except that packages having inside containers of over 1 quart capacity each must be marked with name of contents and bear the red label as prescribed in § 73.405. When fiberboard box is used for such shipments by rail freight, rail express, highway, or water, gross weight must not exceed 65 pounds.

(1) Because of the present emergency and until further order of the Commission, paint, varnish and lacquer may be shipped under the conditions prescribed in paragraph (c) of this section, in containers not exceeding 1 gallon capacity with fiberboard bodies and metal tops and bottoms made leakproof in lieu of glass, earthenware, or metal containers as specified.

### § 73.129 Polishes, metal, stove, furniture and wood, liquid.

(a) Polishes, metal, stove, furniture and wood, liquid, must be packed in specification containers as follows:

(1) As prescribed in § 73.119, according to flash point, pressure, or viscosity.

(2) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter). Metal drums (single-trip) not over 5 gallons capacity with welded side seams, irrespective of flash point or viscosity.

(b) Polishes, metal, stove, furniture and wood, liquid, in glass or earthenware containers of not over 1 quart capacity each, or metal containers not over 5 gallons capacity each, packed in strong outside containers are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter. These exemptions do not apply to shipments offered for transportation by rail express. (See § 73.118 (b) for rail express exemptions.)

### § 73.130 Refrigerating machines.

(a) Refrigerating machines assembled for shipment and containing not over 15 pounds of a flammable liquid for their operation are exempt from specification packaging, marking, and labeling requirements, except that marking name

[1] The use of existing tank cars authorized, but new construction not autohrized.

[2] Copies obtainable from the Compressed Gas Association Inc., 500 Fifth Avenue, New York 36, New York.

of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

**§ 73.131 Road asphalt, or tar, liquid.**

(a) Road asphalt, or tar, liquid, must be packed in specification containers as follows:

(1) As prescribed in § 73.119, according to flash point, pressure, or viscosity.

(2) Spec. 10C (§ 78.157 of this chapter). Wooden barrels or kegs, authorized only for material with flash point above 20° F.

**§ 73.132 Cement, liquid, n.o.s., container cement, linoleum cement, pyroxylin cement, rubber cement, tile cement, wallboard cement, and coating solution.**

(a) Cement, liquid, n.o.s., container cement, linoleum cement, pyroxylin cement, rubber cement, tile cement, wallboard cement, and coating solution must be packed in specification containers as follows:

(1) As prescribed in § 73.119, irrespective of flash point or viscosity, except that spec. 10A or 10B (§§ 78.155 or 78.156 of this chapter), wooden barrels and kegs, must not be used.

NOTE 1: Because of the present emergency and until further order of the Commission, rubber cement containing no carbon bisulfide may be shipped in specification 10A (§ 78.155 of this chapter) wooden barrels or kegs.

(2) Spec. 52 (§ 78.246 of this chapter). Aluminum portable tanks. Authorized for materials irrespective of flash point but only those defined as viscous liquids by § 73.115(b).

**§ 73.133 Spirits of nitroglycerin.**

(a) Spirits of nitroglycerin must consist of not over 10 percent by weight of nitroglycerin in ethyl alcohol. Solutions of nitroglycerin must consist of not over 10 percent by weight of nitroglycerin in acetone. They must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes lined with paraffined paper, spec. 2L (§ 78.30 of this chapter), and with metal inside containers, securely closed with rubber stoppers tied in place. The inside containers must be entirely surrounded by at least 2 inches of dry, fine sawdust or kieselguhr. There must be not over 6 quarts of the mixture in each outside container.

NOTE 1: Because of the present emergency and until further order of the Commission, spirits of nitroglycerin, consisting of not over 10 percent by weight of nitroglycerin in ethyl alcohol, may be shipped in glass bottles not over 2 quarts capacity, securely closed with rubber stoppers tied in place. Each inside container must be entirely surrounded by at least 2 inches of dry fine sawdust or kieselguhr. There must be not over 6 quarts of the mixture in each outside container.

(b) Spirits of nitroglycerin consisting of not over 1 percent by weight of nitroglycerin in ethyl alcohol, in addition to containers specified in paragraph (a) (1) of this section, may be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes, with glass inside containers not over 1 quart capacity each, cushioned by at least 2 inches of dry, fine sawdust or kieselguhr.

[15 F.R. 8302, Dec. 2, 1950]

**§ 73.134 Aluminum triethyl, aluminum trimethyl, pyroforic fuel, pyroforic solutions, zinc ethyl, triisobutyl aluminum, ethyl aluminum sesquichloride, diethyl aluminum chloride, ethyl aluminum dichloride, methyl aluminum sesquichloride, methyl aluminum sesquibromide, methyl-magnesium bromide in ethyl ether in concentrations not over 40 percent, and mixtures or solutions thereof.**

(a) Aluminum triethyl, aluminum trimethyl, pyroforic fuel, pyroforic solutions, zinc ethyl, triisobutyl aluminum, ethyl aluminum sesquichloride, diethyl aluminum chloride, ethyl aluminum dichloride, methyl aluminum sesquichloride, methyl aluminum sesquibromide, methyl magnesium bromide in ethyl ether in concentrations not over 40 percent, and mixtures or solutions thereof must be shipped in devices or apparatus of a type approved by the Bureau of Explosives or in specification containers as follows:

(1) Cylinders as prescribed for any compressed gas except acetylene.

(2) Spec. 105A300–W, 106A500,[1] 106A-500–X, or 110A500–W (§§ 79.100, 79.101, 79.300, 79.301 of this chapter) tank cars. Authorized for aluminum triethyl, aluminum trimethyl, and mixtures or solutions thereof, pyroforic fuel, and triisobutyl aluminum, ethyl aluminum sesquichloride, diethyl aluminum chloride, ethyl aluminum dichloride, methyl aluminum sesquichloride, methyl aluminum sesquibromide, and mixtures or solutions thereof only. Specs. 106A500,[1] 106A500–X and 110A500–W tanks must not be filled to a density exceeding 80 percent of the water capacities of the tanks and tanks must be equipped with an approved spring-relief safety valve. Tanks must be loaded on cars and motor vehicles in such a manner that the safety relief valve will always be in the vapor phase.

NOTE 1: Tanks complying with ICC–106A or ICC–110A (§ 78.275 or § 78.293 of this chapter) specifications may be transported in or on motor vehicles and in the manner authorized in § 77.840(c) of this chapter, provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting.

(3) Spec. 51 (§ 78.245 of this chapter). Portable tanks.

(4) Spec. MC 330 (§ 78.336 of this chapter). Tank motor vehicles having a minimum design pressure of 250 pounds per square inch.

(5) Spec. 17C or 37A (§ 78.115 or 78.131 of this chapter). Metal drums (single-trip) with inside metal cans not over 1-gallon capacity each, constructed of not less than 28-gauge electro-coated tin plate. Inside containers shall have no opening exceeding 1-inch diameter and shall be closed with air-tight soldered screw-cap closures. Inside containers must be surrounded on all sides with incombustible cushioning material. Spec. 17C (§ 78.115 of this chapter) 30-gallon capacity drums shall contain not more than 20 gallons of pyroforic solution per drum and 55-gallon capacity drums shall contain not more than 35 gallons of pyroforic solution per drum; each layer of inside containers must be separated by a tin plate separator in addition to cushioning material. Spec. 37A drums shall not exceed 5-gallons capacity each. Authorized only for pyroforic fuel mixed with solvent.

(b) Aluminum triethyl, aluminum trimethyl and mixtures or solutions thereof, pyroforic fuel, pyroforic solutions, zinc ethyl, triisobutyl aluminum, ethyl aluminum sesquichloride, diethyl aluminum chloride, ethyl aluminum dichloride, methyl aluminum sesquichloride, methyl aluminum sesquibromide, methyl magnesium bromide in ethyl ether in concentrations not over 40 percent, and mixtures or solutions thereof, when offered for transportation by rail express must be packed in glass ampules not over 2 ounces capacity each, securely cushioned with absorbent material in sufficient quantity to completely absorb contents in event of breakage, within an inside metal container, spec. 2R (§ 78.34 of this chapter) enclosed in a strong wooden box.

(c) Methyl magnesium bromide in ethyl ether in concentrations not over 40 percent must be packed in containers as prescribed by paragraphs (a) or (b), or in specification containers as follows:

(1) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside glass bottles not over 1-quart capacity each. Authorized gross weight not over 65 pounds.

(2) Spec. 17C (§ 78.115 of this chapter). Metal drums (single-trip) with openings not exceeding 2.3 inches in diameter.

**§ 73.135 Dimethyl dichlorosilane, ethyl dichlorosilane, ethyl trichlorosilane, methyl trichlorosilane, trimethyl chlorosilane, and vinyl trichlorosilane.**

(a) Dimethyl dichlorosilane, ethyl dichlorosilane, ethyl trichlorosilane, methyl trichlorosilane, trimethyl chlorosilane, and vinyl trichlorosilane must be packed in specification containers as follows:

(1) Spec. 15A or 16B (§§ 78.168 or 78.186 of this chapter). Wooden boxes with glass inside containers not over 1 gallon capacity each securely closed and cushioned with incombustible absorbent material.

(2) Spec. 17H or 37A (§ 78.118 or § 78.131 of this chapter). Metal drums (single-trip) with glass inside containers not over 1 gallon capacity each securely closed and cushioned with incombustible absorbent material.

(3) Spec. 5A (§78.81 of this chapter). Metal drums not over 55 gallons capacity.

(4) Spec. 5F (§ 78.85 of this chapter). Metal drums not over 11 gallons capacity.

[1] Use of existing tank cars authorized, but new construction not authorized.

(5) Spec. 5, 5B, 5C, and 17E (single-trip) (§§ 78.80, 78.82, 78.83, and 78.116 of this chapter). Metal drums. These containers not authorized for shipments by rail express.

(6) Specification cylinders as prescribed for any compressed gas, except acetylene.

(7) Spec. 103,[1] 103–W, 111A60–F–1, or 111A60–W–1 (§§ 79.200, 79.201 of this chapter). Tank cars, without bottom discharge outlet.

(8) Spec. 105A100,[1] 105A100–W, or 111A100–W–4 (§§ 79.100, 79.101, 79.200, 79.201 of this chapter). Tank cars.

(9) Spec. MC 300, MC 303; or MC 304 of steel or stainless steel construction (§§ 78.321, 78.324 or 78.325 of this chapter). Tank motor vehicles.

**§ 73.136 Methyl dichlorosilane and trichlorosilane.**

(a) Methyl dichlorosilane and trichlorosilane must be packed in specification containers as follows:

(1) Spec. 15A or 16B (§§ 78.168 or 78.186 of this chapter). Wooden boxes with glass inside containers not over 1 quart capacity each securely closed and cushioned with incombustible absorbent material.

(2) Spec. 17H or 37A (§ 78.118 or § 78.131 of this chapter). Metal drums (single-trip) with glass inside containers not over 1 quart capacity each securely closed and cushioned with incombustible absorbent material.

(3) Spec. 5A, 5B, or 5C (§ 78.81, § 78.82, or § 78.83 of this chapter). Metal drums not over 55 gallons capacity each. Spec. 5B drums must have no opening exceeding 2.3 inches in diameter. These containers not authorized for shipment by rail express.

(4) Spec. 5F (§ 78.85 of this chapter). Metal drums not over 11 gallons capacity. This container not authorized for shipment by rail express.

(5) Specification cylinders as prescribed for any compressed gas, except acetylene.

(6) Spec. 103,[1] 103–W, 111A60–F–1, or 111A60–W–1 (§§ 79.200, 79.201 of this chapter. Tank cars, without bottom discharge outlet.

(7) Spec. 105A100,[1] 105A100–W, or 111A100–W–4 (§§ 79.100, 79.101, 79.200, 79.201 of this chapter). Tank cars.

(8) Spec. MC 330 (§ 78.336 of this chapter). Tank motor vehicle.

(9) Spec. 51 (§ 78.245 of this chapter). Portable tanks.

**§ 73.137 Lithium aluminum hydride, ethereal.**

(a) Lithium aluminum hydride, ethereal, must be packed in specification containers as follows:

(1) Spec. 15A (§ 78.168 of this chapter). Wooden boxes with inside glass or earthenware containers not over 1 quart each enclosed in air-tight metal cans and cushioned with sufficient incombustible cushioning material to completely absorb contents in event of breakage.

(2) Spec. 6A, 6B, 6C, or 17H (single-trip) (§§ 78.97, 78.98, 78.99, or 78.118 of this chapter). Metal barrels or drums with not more than one inside glass container not exceeding 2 gallons capacity. The inside container must be completely cushioned in sufficient incombustible cushioning material to completely absorb the contents in event of breakage.

(3) Specification cylinders as prescribed for any compressed gas, except acetylene. Valves or fittings must be protected from injury by a cap or equally efficient device.

**§ 73.138 Pentaborane.**

(a) Pentaborane must be packed in specification cylinders as prescribed for any compressed gas, except acetylene. Cylinders must be protected with valve protection cap or must be packed in strong wooden boxes and blocked therein so as to protect the valves from injury under conditions normally incident to transportation. Cylinders not exceeding 2 inches in diameter nor 6 inches in length, excluding the length of the valve, may also be packed in strong solid fiberboard boxes, having no outside dimension less than 4 inches, completely filled with layers of strong corrugated fiberboard, the center of which shall be cut out to fit the cylinder valve, and otherwise so designed that neither the cylinder nor the valve will be in contact with any wall of the box under conditions normally incident to transportation.

(b) Pentaborane must not be offered for transportation by rail express.

**§ 73.139 Ethylene imine, inhibited, and propylene imine, inhibited.**

(a) Ethylene imine and propylene imine must be inhibited and must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§ 78.168 or § 78.169 of this chapter). Wooden boxes, with inside containers which must be securely sealed glass ampules or glass bottles, contents not over 16 fluid ounces or 1 pound each, in tightly closed metal cans. If more than one ampule or bottle is packed in a metal can, ampules or bottles must be separated by fiberboard partitions. Ampules or bottles must be cushioned in vermiculite or equally efficient incombustible cushioning material in quantity sufficient to completely absorb contents in event of breakage. Not more than 5 pints of liquid may be packed in any outside wooden box.

(2) Spec. 15A, 15B, or 15C (§ 78.168, 78.169, or 78.170 of this chapter). Wooden boxes with not more than four inside metal drums, spec. 37B (§ 78.132 of this chapter), not over 1-gallon capacity each, or not more than one spec. 37B metal drum of 5-gallons capacity, in one outside box. Inside drums must be surrounded on all sides with incombustible absorbent cushioning material.

(3) Spec. 6A, 6B, 6C, or 6J (§ 78.97, 78.98, 78.99, or 78.100 of this chapter). Metal barrels or drums, with one inside spec. 17E (§ 78.116 of this chapter) metal drum not over 30-gallons capacity. Inside drum must be completely surrounded with incombustible cushioning material.

**§ 73.140 Zirconium, metallic, solutions, or mixtures thereof, liquid.**

(a) Zirconium, metallic, solutions, or mixtures thereof, liquid, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Wooden boxes with inside metal containers. Each inside container shall not contain more than 20 individual glass or porcelain jars, not exceeding 2-ounce capacity each, securely closed and completely cushioned in incombustible cushioning material in sufficient quantity to completely absorb the contents.

**§ 73.141 Amyl mercaptan, butyl mercaptan, ethyl mercaptan, isopropyl mercaptan, propyl mercaptan, and aliphatic mercaptan mixtures.**

(a) Amyl mercaptan, butyl mercaptan, ethyl mercaptan, isopropyl mercaptan, propyl mercaptan, and aliphatic mercaptan mixtures must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with securely closed inside metal containers not over 5 gallons capacity each; or in tightly closed glass bottles not exceeding 1 quart capacity each, securely cushioned in sufficient quantity of absorbent material to completely absorb the contents in event of leakage.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with securely closed inside metal containers not over 1 gallon capacity each; or in tightly closed glass bottles not exceeding 1 quart capacity each, securely cushioned in sufficient quantity of absorbent material to completely absorb the contents in event of leakage.

(3) Spec. 5, 5A, 5B, or 5C (§§ 78.80, 78.81, 78.82, or 78.83 of this chapter). Metal barrels or drums, with not more than one opening not exceeding 2.3 inches in diameter and not more than one vent opening not exceeding 1 inch in diameter. Gaskets are required and must be not less than 3/32-inch thick and of resilient material such as polyethylene, neoprene, or equally efficient material.

(4) Spec. 17C (§ 78.115 of this chapter). Metal drums (single-trip), with not more than one opening not exceeding 2.3 inches in diameter and not more than one vent opening not exceeding 1 inch in diameter. Gaskets are required and must be not less than 3/32-inch thick and of resilient material such as polyethylene, neoprene, or equally efficient material.

(5) Spec. 17E (§ 78.116 of this chapter). Metal drums (single-trip), not over 5 gallons capacity, without opening except bung hole not exceeding 2.3 inches in diameter. Gaskets are required and must be not less than 3/32-inch thick and of resilient material such as polyethylene, neoprene, or equally efficient material. (See also paragraph (a) (6) of this section.)

(6) Spec. 17E (§ 78.116 of this chapter). Metal drums (single-trip), not over 55 gallons capacity, with not more than one opening not exceeding 2.3 inches in diameter and not more than

[1] Use of existing tank cars authorized, but new construction not authorized.

one vent opening not exceeding 1 inch in diameter. Gaskets are required and must be not less than 3/32-inch thick and of resilient material such as polyethylene, neoprene, or equally efficient material. Authorized only for mercaptans having flash point above 20° F.

(7) Spec. 103–W, 105A100,[1] 105A100–W, 111A60–F–1, or 111A60–W–1 (§§ 79.100, 79.101, 79.200, 79.201 of this chapter). Tank cars. Specs. 103–W, 111A60–F–1, and 111A60–W–1 tank cars equipped with bottom outlets must have bottom outlets effectively sealed. Bottom washout permitted.

(8) Spec. MC 330 (§ 78.336 of this chapter), tank motor vehicles.

(9) Specification cylinders as prescribed for any compressed gas, except acetylene.

(b) Warning or odorizing devices containing not more than one ounce of a mercaptan or an aliphatic mercaptan mixture in a hermetically sealed container or in a hermetically sealed portion of the device are not subject to the regulations in Parts 71–78 and 197 of this chapter.

**§ 73.143 Methylchloromethyl ether, anhydrous.**

(a) Methylchloromethyl ether, anhydrous, must be packed in specification containers as follows:

(1) Spec. 5K (§ 78.88 of this chapter). Nickel barrels or drums.

(2) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers which must be glass or earthenware, not over 1 gallon capacity each, except that inside containers up to 3 gallons each are authorized when only one inside container is packed in each outside container.

(b) Methylchloromethyl ether, anhydrous, must not be offered for transportation by rail express.

**§ 73.144 Inks.**

(a) Inks must be packed in specification containers as follows:

(1) In containers as prescribed in § 73.119, according to flash point, pressure, or viscosity.

(2) Spec. 17C (§§ 78.115 of this chapter). Full removable head metal drums (single-trip).

(3) Spec. 37C (§ 78.135 of this chapter). Metal drums (nonreusable container) not over 5 gallons capacity each. Authorized only for material having flash point over 20 F.

**§ 73.145 Dimethylhydrazine, unsymmetrical, and methylhydrazine.**

(a) Dimethylhydrazine, unsymmetrical, and methylhydrazine must be packed in specification containers as follows:

(1) Spec. 1D (§ 78.4 of this chapter). Boxed glass carboys.

(2) Spec. 15A, 15B, or 15C (§ 78.168, § 78.169, or § 78.170 of this chapter). Wooden boxes with inside containers which must consist of glass bottles not exceeding 1-gallon capacity each, cushioned by means of vermiculite within tin cans which shall be tightly closed, or containers not over 2 quarts capacity each made of aluminum not less than 0.04 inch thick. Closures and gaskets must be of material which will not react dangerously with or be decomposed by contact with the contents.

(3) Spec. 5, 5A, or 5C (§ 78.80, § 78.81, or § 78.83 of this chapter); or 17E (§ 78.116 of this chapter) (single-trip). Metal barrels or drums which shall be of type 304 or 347 stainless steel, with openings not exceeding 2.3 inches in diameter.

(4) Spec. 17C (§ 78.115 of this chapter). Metal barrels or drums (single-trip) with openings not exceeding 2.3 inches in diameter. Authorized only for dimethylhydrazine, unsymmetrical.

(5) Spec. 42B (§ 78.107 of this chapter). Aluminum drums. Authorized only for dimethylhydrazine, unsymmetrical.

(6) Spec. 103–W, 103C–W, 105A100–W, or 111A100–W–4 (§§ 79.100, 79.101, 79.200, 79.201 of this chapter). Tank cars. Authorized for dimethylhydrazine, unsymmetrical only. Tank cars must be equipped with steel safety valves of approved design and 103–W tank cars must not be equipped with bottom outlets. Specs. 105A200–W, 105A300–W, 105A400–W, 105A500–W, and 105A600–W (§§ 79.100, 79.101 of this chapter) tanks must be restenciled 105A100–W and be equipped with safety valves of the type and size used on spec. 105A100–W tank cars.

(7) Spec. MC 300, MC 301,[1] MC 302, MC 303, MC 310 or MC 311 (§ 78.321, 78.323, 78.324, 78.330 or 78.331 of this chapter). Tank motor vehicles equipped with steel safety valves of approved design. Spec. MC 300, MC 301, MC 302, and MC 303 cargo tanks must not be equipped with bottom outlets. Authorized only for dimethylhydrazine, unsymmetrical.

**§ 73.146 Heaters for refrigerator cars, liquid fuel type.**

(a) Heaters of the liquid fuel type for refrigerator cars, containing flammable liquid fuel, may be shipped in carload or truckload lots provided each heater shall have been inspected to see that flame has been extinguished, that there is no leakage of fuel, and that controls are in the "off" position. Heaters shall be loaded and braced so as to prevent falling, tipping, or mechanical damage under normal conditions incident to transportation.

(b) Heaters of the liquid fuel type for refrigerator cars must have their fuel tanks completely drained if offered for transportation or transported in less-than-carload or less-than-truckload lots.

**§ 73.147 Methyl vinyl ketone, inhibited.**

(a) Methyl vinyl ketone must be inhibited and must be packed in specification containers as follows:

(1) As prescribed in § 73.119 (a) or (b).

(b) Methyl vinyl ketone, inhibited, in glass or metal inside containers having not over 4 fluid ounces each and not more than one inside container securely and efficiently cushioned in strong outside fiberboard or wooden boxes, is exempt from specification packaging, marking, and labeling requirements except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

**§ 73.148 Monoethylamine.**

(a) Monoethylamine must be packed in specification containers as follows:

(1) Spec. 5 or 5A (§§ 78.80 or 78.81 of this chapter). Metal barrels or drums, with openings not exceeding 2.3 inches in diameter. Bung labels required as prescribed in § 73.119(i).

(2) Cylinders as prescribed for any compressed gas except acetylene.

(3) Tank cars prescribed in § 73.119(f)(3).

(4) Spec. 106A500,[1] 106A500–X, or 110A500–W (§§ 79.300, 79.301 of this chapter). Tank cars.

NOTE 1: Tanks complying with ICC–106A or ICC–110A (§ 78.275 or § 78.293 of this chapter) specifications may be transported in or on motor vehicles and in the manner authorized in § 77.840(c) of this chapter, provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting.

(5) Spec. MC 304 (§ 78.325 of this chapter). Tank motor vehicle.

## Subpart D—Flammable Solids and Oxidizing Materials; Definition and Preparation

**§ 73.150 Flammable solid; definition.**

(a) A flammable solid, for the purpose of Parts 71–78 of this chapter, is any solid material, other than one classified as an explosive, which, under conditions incident to transportation, is liable to cause fires through friction, absorption of moisture, spontaneous chemical changes, retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious transportation hazard. Examples: certain metallic hydrides, metallic sodium and potassium, and certain oily fabrics, processed meals, and nitrocellulose products.

**§ 73.151 Oxidizing material; definition.**

(a) An oxidizing material for the purpose of Parts 71–78 of this chapter is a substance such as a chlorate, permanganate, peroxide, nitro carbo nitrate, or a nitrate that yields oxygen readily to stimulate the combustion of organic matter.

**§ 73.152 Packing.**

(a) Flammable solids or oxidizing materials must not be packed in the same outside container with corrosive liquids unless the corrosive liquids are in bottles, cushioned by incombustible absorbent material, in tightly closed metal containers.

NOTE 1: Oxidizing or other materials in quantity not exceeding 4 ounces, in securely closed metal cans, packed in the same compartment with other securely packed ma-

[1] Use of existing tank cars authorized, but new construction not authorized.

[1] Use of existing cargo tanks authorized, but new construction not authorized.

terials necessary for a complete fumigant, are acceptable for transportation.

(b) Closing and cushioning. All containers must be tightly and securely closed. Inside containers must be cushioned as prescribed or in any case when necessary to prevent breakage or leakage.

**§ 73.153 Exemptions for flammable solids and oxidizing materials.**

(a) Flammable solids and oxidizing materials, except those for which no exemptions are provided as indicated by the "No exemption" statement in § 72.5 of this chapter, in inside containers not over 1 pound net weight each, in outside containers not exceeding 25 pounds net weight each are, unless otherwise provided, exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter. (See § 73.182 for exemptions for nitrates, and paragraph (b) of this section for exemptions for organic peroxides.)

(b) Liquid or solid organic peroxides, except acetyl benzoyl peroxide, solid, and benzoyl peroxide, are, unless otherwise provided, exempt from specification packaging, marking, and labeling requirements, when packed in accordance with the following subparagraphs of this paragraph, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter except § 77.817, and Part 197 of this chapter.

(1) Strong outside containers having not over 1 pint or 1 pound net weight of material in any one outside package, with inside containers securely packed and cushioned with incombustible cushioning material, except that cushioning material is not required when the liquid is contained in strong, securely closed plastic containers not over 1 ounce capacity each, properly packaged to prevent breakage or leakage.

(2) Strong outside containers having not more than 24 inside fiberboard containers each containing not more than 70 chemically resistant closed plastic tubes having fluid capacity not over ⅛ ounce each and securely packed in incombustible cushioning material. No one inside fiberboard container shall have more than 1 pint of liquid.

**§ 73.154 Flammable solids and oxidizing materials not specifically provided for.**

(a) Flammable solids and oxidizing materials, as defined in §§ 73.150 and 73.151, other than those for which special packing requirements are prescribed, must be packed in specification containers of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein, as follows:

(1) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 17C, 17E, 17H, 37A, or 37B (§§ 78.115, 78.116, 78.118, 78.131, or 78.132 of this chapter), metal drums (single-trip).

(3) Spec. 10A, 10B, or 10C (§§ 78.155, 78.156, or 78.157 of this chapter). Wooden barrels or kegs.

(4) Spec. 11A (§ 78.160 of this chapter). Wooden barrels or kegs with inside containers or with suitable lining for bulk shipments.

(5) Spec. 11B (§78.161 of this chapter). Wooden barrels or kegs with inside containers; or metal lined, spec. 2F, (§ 78.25 of this chapter) for bulk shipments.

(6) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers which must be metal cans; sliding-lid wooden boxes; fiber cans or boxes, spec. 2G (§ 78.26 of this chapter), not over 5 pounds capacity each; or glass bottles not over 1 pound capacity each. Packages containing glass containers must not weigh over 65 pounds gross.

(7) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes lined, spec. 2F or 2M (§§ 78.25 or 78.31 of this chapter).

(8) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers.

(9) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized net weight not over 225 pounds.

(10) Spec. 22A (§ 78.196 of this chapter). Plywood drums.

(11) Spec. 22B (§78.197 of this chapter). Plywood drums with inside metal drums, spec. 2F (§ 78.25 of this chapter).

(12) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes constructed of at least 275-pound test double-faced fiberboard and provided with a perimeter liner and bottom pad of at least 200-pound test fiberboard. Boxes constructed of at least 350-pound fiberboard having top and bottom pads shall not require perimeter liner. Product must be contained within a tightly closed polyethylene or other equally efficient plastic bag constructed of material having minimum thickness of 0.004 inch. Not more than 25 pounds net weight of product may be packed in one outside box.

(13) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 5 pounds capacity each. Not more than four bottles having capacity of 5 pounds each, shall be packed in one outside container. Shipper must have established that completed package meets test requirements prescribed by § 78.210–10 of this chapter.

**§ 73.155 Bags, nitrate of soda, empty and unwashed.**

(a) Bags, nitrate of soda, empty and unwashed, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes.

(2) Spec. 10A, 10B, 10C, 11A, or 11B (§§ 78.155, 78.156, 78.157, 78.160 or 78.161 of this chapter). Wooden barrels.

(b) Bags in carload and truckload lots loaded by consignor and to be unloaded by consignee may also be shipped loose or baled, provided the car or highway vehicle is lined with paper and doors of cars are properly stripped after sealing and provision is made on highway vehicle to prevent entrance of sparks.

**§ 73.156 Barium peroxide and calcium peroxide.**

(a) Barium peroxide and calcium peroxide must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185 or 78.190 of this chapter). Wooden boxes with inside glass containers not over 1 pound capacity each; or with inside glass containers not over 5 pounds capacity each cushioned with incombustible cushioning material; or with inside metal containers or lining, spec. 2F (§ 78.25 of this chapter).

(2) Spec. 6A (§ 78.97 of this chapter). Metal barrels or drums. Gross weight not to exceed 880 pounds.

(3) Spec. 6B or 6C (§§ 78.98 or 78.99 of this chapter). Metal barrels or drums with not more than 1400 pounds net weight in each container.

(4) Spec. 17E, 17H, 37A, or 37B (§§ 78.116, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip).

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized net weight not over 225 pounds.

**§ 73.157 Benzoyl peroxide, chlorobenzoyl peroxide (para), cyclohexanone peroxide, dimethylhexane dihydroperoxide, lauroyl peroxide, or succinic acid peroxide, wet.**

(a) Benzoyl peroxide, chlorobenzoyl peroxide (para), cyclohexanone peroxide over 50 percent concentration but not exceeding 85 percent concentration, dimethylhexane dihydroperoxide, lauroyl peroxide, and succinic acid peroxide, wet with at least 30 percent of water by weight, except cyclohexanone peroxide, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Wooden boxes with inside metal containers or lining, spec. 2F (§ 78.25 of this chapter), or with inside paper bags lined with polyethylene at least 0.002 inch thick and not over 1 pound dry weight capacity each; or aluminum drums of at least 16 gauge United States standard, tightly sealed. Gross weight not over 200 pounds.

(2) Spec. 5, 5B, 6A, 6B, or 6C (§§ 78.80, 78.82, 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums having liners of polyethylene or other suitable material. Not more than 4 vent holes of not to exceed ⅛-inch diameter may be provided in the drum near the top periphery. Gross weight not to exceed 350 pounds. Authorized only for benzoyl peroxide, wet.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, with inside fiber containers securely closed by taping or gluing, or inside securely closed paper bags lined with 0.002 inch thick polyethylene, not over 1 pound capacity each. Except for lauroyl peroxide, wet, each inside container must be surrounded by asbestos or fire-resistant cushioning ma-

terial which will protect the contents with equal efficiency. Gross weight in spec. 12B65 boxes may be more than 65 but not more than 80 pounds provided net weight of contents does not exceed 50 pounds.

(4) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized only for cyclohexanone peroxide over 50 percent concentration but not exceeding 85 percent concentration and dimethylhexane dihydroperoxide, which materials must be packed in a plastic inside container, securely closed, and formed of polyethylene film sheets having minimum thickness of 0.002 inch. Authorized net weight in one outside container shall not exceed 50 pounds for cyclohexanone peroxide and shall not exceed 100 pounds for dimethylhexane dihydroperoxide.

**§ 73.158 Benzoyl peroxide, dry, chlorobenzoyl peroxide (para), dry, cyclohexanone peroxide, dry, dimethylhexane dihydroperoxide, dry, lauroyl peroxide, dry, or succinic acid peroxide, dry.**

(a) Benzoyl peroxide, dry, chlorobenzoyl peroxide (para), dry, cyclohexanone peroxide over 50 percent concentration but not exceeding 85 percent concentration, dry, dimethylhexane dihydroperoxide, dry, lauroyl peroxide, dry, or succinic acid peroxide, dry, must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§ 78.168 or § 78.169 of this chapter). Wooden boxes, with inside fiber containers securely closed by taping or gluing, or inside securely closed paper bags lined with 0.002 inch thick polyethylene, not over 1 pound capacity each. Except for lauroyl peroxide, dry, each inside container must be surrounded by asbestos or fire-resistant cushioning material which will protect contents with equal efficiency. Net weight in outside container must not exceed 50 pounds, except that for lauroyl peroxide, dry, net weight not over 100 pounds is authorized.

(2) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized only for dimethylhexane dihydroperoxide, dry, which must be packed in a plastic container, securely closed, and formed of polyethylene film sheets having minimum thickness of 0.002 inch, and lauroyl peroxide, dry. Authorized net weight not over 100 pounds in one outside container.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, with inside fiber containers securely closed by taping or gluing, or inside securely closed paper bags lined with polyethylene not less than 0.002 inch thick, not over 1 pound capacity each. Except for lauroyl peroxide, dry, each inside container must be surrounded by asbestos or fire-resistant cushioning material which will protect the contents with equal efficiency. Gross weight in Spec. 12B65 boxes may be more than 65 but not more than 80 pounds provided net weight of contents does not exceed 50 pounds.

**§ 73.159 Burnt cotton.**

(a) "Burnt cotton" is cotton that has been on fire and from which the burnt portions have not been removed by repicking. It must not be offered for transportation until not less than 10 days have elapsed since the last evidence of fire in it. It must be marked and described on shipping orders and bills of lading as "Burnt Cotton, Yellow Label", and cars containing any quantity of it must be protected by the "Dangerous" placard.

(b) Burnt cotton must not be offered for transportation by rail express.

(c) When burnt cotton is picked and baled the separated cotton is not classed as a dangerous article and is not subject to Parts 71–78 and 197 of this chapter.

**§ 73.160 Calcium chlorite and sodium chlorite.**

(a) Calcium chlorite and sodium chlorite must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A or 19A (§§ 78.168, 78.169, 78.170, 78.185 or 78.190 of this chapter). Wooden boxes with inside containers which must be glass or earthenware not over 2¼ pounds capacity each or metal not over 5 pounds capacity each.

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(3) Spec. 17E, 17H, 37A, or 37B (§§ 78.116, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip).

**§ 73.161 Calcium phosphide.**

(a) Calcium phosphide must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes lined, spec. 2F (§ 78.25 of this chapter), and with hermetically sealed inside containers.

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

**§ 73.162 Charcoal.**

(a) Charcoal as described in this paragraph is exempt from specification packaging, marking, and labeling requirements for transportation by rail freight, highway, or water except when for transportation by carrier by water, name of contents must be shown on outside container. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817 and Part 197 of this chapter.

(1) Charcoal, activated.

(2) Charcoal made from pine wood and processed so that it is not liable to heat dangerously or cause fires in transportation.

(3) Charcoal briquettes made from wood charcoal with starch and water, or tar, for a binder, which have been screened and cooled to a temperature below 100° F., before being offered for transportation.

(4) Charcoal screenings made from "pinon" wood.

(5) Charcoal made from walnut shells, corn cobs, peach pits, and similar material, must be cooled and held not less than five days before shipment, and shipped in bags, barrels, or boxes. The five-day holding period shall not apply to charcoal briquettes screened and cooled to a temperature below 100° F. before being offered for transportation.

(6) Charcoal, lump, made by the old kiln or pit method by which long air exposure is provided before shipment.

(7) Charcoal, wood, except charcoal screenings, when packed in boxes or barrels.

(8) Charcoal, wood, when in bags in less-than-carload or less-than-truckload shipments of not exceeding 2,000 pounds.

(9) When offered for transportation by rail express, charcoal, except charcoal briquettes, must be packed in barrels, bags, or boxes, and must bear the yellow label.

(10) Charcoal screenings or ground, crushed, granulated, or pulverized charcoal, from pit or kiln burned charcoal, provided the screenings or the material from which the ground charcoal is made has been exposed to the air for not less than 5 days prior to shipment or grinding (see paragraphs (j) and (k) of this section).

(b) Charcoal made in round retorts must be transferred to air-tight metal cans for cooling, and must be kept in these cans for 24 hours or more. The charcoal after removal from these cans should be aired by spreading on a floor to a depth not exceeding 1 foot. This air exposure must last not less than 44 hours. Not less than 72 hours should elapse from the time the air exposure of the charcoal commences before a car loaded with it is closed for shipment, or before the lump charcoal is placed in paper bags.

(1) The charcoal during this airing period must be protected from the weather, and exposed to good circulation of air. When the charcoal is aired on the floor for only 24 hours and then placed in burlap bags, it must be kept in the bags 60 hours before shipment. If the charcoal is not aired on the floor for at least 24 hours, it must be kept in the burlap bags for at least 96 hours before loading for shipment.

(c) Charcoal made in ovens in slatted cars should be kept for two periods of 24 hours each in first and secondary air-tight cooling chambers respectively. After removing the charcoal from the secondary coolers it must be exposed to good air circulation, but protected from the weather for a period of not less than 44 hours.

(1) Not less than 72 hours must elapse from the time the air exposure of the charcoal commences before a car loaded with it is closed for shipment, or before the lump charcoal is placed in paper bags.

(d) When fire occurs in charcoal during air exposure period, it should be extinguished with as little water as possible. Any charcoal wet in this way or otherwise must be dried, by again heating in the retorts or ovens, and cooled and aired in the usual way described in paragraphs (b) and (c) of this section, or the charcoal must be set aside and allowed to dry for not less than 30 days before shipment.

(e) Charcoal, lump, must be dry and free from screenings and brands.

(1) Shipments must be loaded into tight box cars, tight container cars, or into tight closed-top hopper cars, except

that lump charcoal made from soft wood may be shipped in open or stock cars.

(2) When a chute is used in loading the car, the chute must contain a properly constructed screen which must be kept clean. This screen shall be not less than ¾ inch mesh. Forks with prongs not less than 1 inch apart must be used instead of shovels to handle the charcoal. The screenings which accumulate in the doorway of the car must be removed before loading the doorway. The car should be swept before loading, and a car which has contained lime must be thoroughly cleaned before loading with charcoal. The doors of the car must be closed tightly before the car is forwarded.

(3) Lump charcoal may be shipped in bags, barrels or boxes, or bulk in cars.

(4) Lump charcoal, dry and free from screenings and brands, may be shipped in bulk in motor vehicles. Vehicle must be swept before loading and if it contained lime it must be thoroughly cleaned.

(f) Charcoal screenings consist of small pieces of charcoal varying from about one-half inch in the maximum dimension to grains of dust. These screenings are more liable to produce fires than other forms of charcoal. Charcoal screenings from wet charcoal or wet screenings or screenings which have been wet must not be offered for shipment unless they have been dried for not less than 12 hours in a retort or oven, and then subjected to not less than 10 days airing and cooling before shipment.

(1) Charcoal screenings must be stored in a dry place, in loosely piled bags, freely exposed to the air for not less than 20 days after separation from the lump before shipment.

(2) Screenings from pine-wood charcoal must be stored as above described for not less than five days before shipment.

(3) Charcoal screenings must be packed in cotton or jute bags of not greater than 4 bushels capacity.

(4) Charcoal screenings, except screenings made from "pinon" wood, must not be offered for transportation by rail express.

(g) Charcoal ground, crushed, granulated, or pulverized is prepared from either lump charcoal or screenings.

(1) Lump charcoal used for the preparation of ground, crushed, granulated, or pulverized charcoal must be stored subject to ventilation, and protected from the weather for not less than 20 days after its removal from the coolers before milling; or the ground, crushed, granulated or pulverized charcoal must be stored in bags, subject to ventilation and protected from the weather for not less than 20 days before shipment. Lump charcoal made from pine wood must be stored as above described for not less than 5 days before milling. Ground, crushed, or granulated charcoal made by the "Stafford" process must be stored subject to ventilation and protected from the weather for not less than 7 days before shipment in lieu of the 20-days' storage otherwise prescribed.

(2) Charcoal screenings used for the preparation of ground, crushed, granulated, or pulverized charcoal must be stored in a dry place in loosely piled cotton or jute bags freely exposed to air for a period of not less than 20 days after separation from the lump charcoal, and before milling; or the ground, crushed, granulated, or pulverized charcoal must be stored in bags, subject to ventilation and protected from the weather for not less than 20 days before shipment. Charcoal screenings made from pine wood charcoal must be stored as above described not less than 5 days before milling.

(3) Ground, crushed, granulated, or pulverized charcoal must be packed in tight sift-proof wooden barrels or boxes containing not more than 4 bushels each; or in fiberboard boxes; or in unlined jute bags, or in strong unlined cotton bags, containing not more than 4 bushels each; or in paper-lined jute bags, or in paper bags, containing not more than 2½ bushels each. Whenever practicable, all boxes, barrels, or bags, after filling, should be allowed to remain open and freely exposed to the air, and protected from the weather for not less than 24 hours before being closed. Ground, crushed, granulated, or pulverized charcoal made from pine-wood charcoal should be so stored for not less than 72 hours before the packages are closed.

(h) Charcoal, screenings or ground, crushed, granulated or pulverized charcoal, in bags, when loaded in cars for shipment by rail must be so loaded that the bags are laid horizontally in the car, and so piled that there will be spaces for efficient air circulation. These spaces must be not less than 4 inches wide. If the bags are not compactly filled and closed so as to avoid free space within, transverse wooden strips must be laid between the bags and extending the full width of the car; these strips should be approximately 2 feet apart vertically and longitudinally. The bags must not be piled closer than 6 inches from the top of the car, and no more than 26,000 pounds of screenings, ground, granulated, crushed, or pulverized charcoal, shall be loaded in a 36-foot, 6-inch car, 27,000 pounds in a 37-foot, 6-inch car, 28,000 pounds in a 38-foot, 6-inch car, 29,000 pounds in a 39-foot, 6-inch car, 36,000 pounds in a 40-foot, 6-inch car, and 40,000 pounds in a 50-foot, 6-inch car. A tight car must be used, and any loose material must be swept up and removed from the doorway of the car before completing the loading. On recommendation of the Bureau of Explosives, other methods of loading shown to be at least equally efficient in securing the necessary ventilation will be authorized.

(i) See § 77.838 of this chapter for loading in motor vehicles.

(j) Charcoal burned in pits or kilns must be thoroughly cooled in the sealed kilns. After the kilns are opened, the charcoal must be allowed to stand in the open kiln or elsewhere exposed to the air for not less than 24 hours before loading in a freight car. Charcoal burned in kilns may be loaded in open cars or in box cars, but after loading in box cars, the cars must be allowed to stand not less than 24 hours with doors open before shipment.

(k) Screenings, or ground, crushed, granulated, or pulverized charcoal, from pit or kiln burned charcoal, are considered as non-hazardous, provided the screenings or the material from which the ground charcoal is made has been exposed to the air for not less than 5 days prior to shipment or grinding.

(l) Reburned charcoal must be cooled and exposed to good fresh-air circulation for not less than five days after removal from the reburning furnaces and before being shipped or ground to produce ground or pulverized charcoal.

**§ 73.163 Chlorate of soda, chlorate of potash, and other chlorates.**

(a) Chlorate of soda, chlorate of potash, and other chlorates must be packed in specification containers as follows:

(1) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 17E, 17H, 37A, or 37B (§§ 78.116, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip).

NOTE 1: Specs. 37A and 37B. Metal drums for export service, marked for an authorized gross weight of 160 pounds, must be at least 24 gauge metal throughout.

(3) Spec. 21C, 22A, or 22B (§ 78.224, § 78.196 or § 78.197 of this chapter). Fiber or plywood drums with inside metal drums, spec. 2F (§ 78.25 of this chapter). Authorized net weight not over 225 pounds.

(4) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185 or 78.190 of this chapter). Wooden boxes, or spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter), wooden barrels or kegs, with tightly closed inside containers which must be of metal not over 10 pounds capacity each; or of glass not over 5 pounds each; or of fiber, spec. 2G (§ 78.26 of this chapter), not over 6 pounds capacity each.

(5) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside metal cans not over 5 pounds capacity each, closed air tight and with not over 25 pounds of chlorate in the outside container.

(6) Chlorates wet with 10 percent or more of water are authorized for shipment in tank cars, spec. 103,[1] 103–W, 111A60–F–1, or 111A60–W–1 (§§ 79.200, 79.201 of this chapter), when equally distributed therein.

(7) Chlorate of soda, dry, is authorized for shipment in aluminum or steel tank car tanks, steel cargo tank vehicles, tight sift-proof covered hopper cars, or tight sift-proof covered hopper type motor vehicles. Tank car tanks, cargo tank vehicles, hopper cars, and hopper type motor vehicles must be thoroughly cleaned before loading.

(8) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 5 pounds capacity each. Not more than four bottles having capacity of 5 pounds each, shall be packed in one outside container. Shipper must have established that completed package meets test requirements prescribed by § 78.210–10 of this chapter.

[1] Use of existing tank cars authorized, but new construction not authorized.

**§ 73.164 Chromic acid.**

(a) Chromic acid must be packed in specification containers as follows:

(1) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 17E, 17H, 37A, or 37B (§ 78.116, 78.118, 78.131, or 78.132 of this chapter). Metal drums (single-trip). Spec. 37A metal drums constructed of 22-gauge steel are authorized for a gross weight of 490 pounds when shipped in carload or truckload lots only.

(3) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes, with inside glass bottles of not greater than 5 pounds capacity each, with closures securely fastened, each bottle individually packed in a tight metal container, and cushioned therein with incombustible mineral packing material; or with tightly closed metal inside containers, not over 10 pounds capacity each.

(4) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 5 pounds capacity each. Not more than four bottles having capacity of 5 pounds each, shall be packed in one outside container. Shipper must have established that completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(5) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with metal inside containers which must have closing device securely fastened by positive means (not friction), not over 1-gallon capacity each. Not more than 4 metal containers shall be packed in one outside box.

**§ 73.165 Coal, ground bituminous, sea coal, coal facings.**

(a) Coal, ground bituminous, sea coal, coal facings, 90 percent of which will pass through a 100-mesh sieve, must be stored for at least six days after grinding, or if not so stored must be shipped in tight metal tank cars or in tight metal containers on container cars, or in permanently covered metal hopper cars, or in other tight metal containers, or in tight, metal-bodied, covered motor vehicles.

(b) Coal, ground bituminous, which has been dried by heating before grinding must be packed in hermetically sealed metal-lined wooden boxes or air-tight metal containers.

**§ 73.166 Cobalt resinate, precipitated, calcium resinate, and calcium resinate fused.**

(a) Cobalt resinate, precipitated, calcium resinate, and calcium resinate fused, must be packed in specification containers as follows:

(1) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 17E, 17H, 37A, or 37B (§§ 78.116, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip).

(3) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes with air-tight metal inside containers.

**§ 73.167 Cotton waste, oily.**

(a) Cotton waste, oily with more than 5 percent of vegetable or animal oil must be packed as follows:

(1) In hermetically sealed metal-lined wooden boxes or air-tight metal containers.

(b) Such cotton waste must not be offered for transportation by carriers by rail express.

**§ 73.168 Lithium amide, powdered.**

(a) Lithium amide, powdered, must be packed as follows:

(1) As prescribed in § 73.154 (a) (1), (2), (5), (8) and (11).

(2) Spec. 21C (§ 78.224 of this chapter). Fiber drums with inside metal drums, spec. 2F (§ 78.25 of this chapter). Authorized net weight not over 225 pounds.

**§ 73.169 Fiber, burnt.**

(a) Fiber, burnt, must be packed in hermetically sealed metal-lined wooden boxes or airtight metal containers.

(b) Such fiber must not be offered for transportation by rail express.

**§ 73.170 Fibers or fabrics impregnated, saturated or coated.**

(a) Fibers or fabrics impregnated, saturated or coated with animal or vegetable oils, or organic substances, manufactured articles or processed materials which are liable to spontaneous heating or combustion in transit must be packed in hermetically sealed metal-lined wooden boxes or airtight metal containers.

(b) Such materials, substances or articles must not be offered for transportation by rail express.

**§ 73.171 Fish scrap or fish meal.**

(a) Fish scrap or fish meal containing less than 6 or more than 12 percent moisture (does not include wet acidulated fish scrap with moisture 40 to 55 percent), or which has not been sufficiently cooled after manufacture, or is liable to spontaneous heating in transit, must be packed in air-tight metal containers.

(b) Such fish scrap or fish meal must not be offered for transportation by rail express.

**§ 73.172 Hair, wet.**

(a) Hair, wet, must not be offered for transportation except in gondola cars or in open motor vehicles with metal bodies.

(b) Hair, wet, must not be offered for transportation by carriers by rail express.

**§ 73.173 Aluminum dross or magnesium dross.**

(a) Aluminum dross or magnesium dross must not be shipped when hot or when containing moisture liable to cause heating or fire during transportation.

**§ 73.174 Iron sponge, spent oxide, spent iron mass, or spent iron sponge.**

(a) Iron sponge that has not been properly oxidized during manufacture must be packed in hermetically sealed metal-lined wooden boxes or air-tight metal containers.

(b) Iron sponge not properly oxidized must not be offered for transportation by carriers by rail express.

(c) Spent oxide, spent iron mass, or spent iron sponge must be loaded in open steel cars or open highway vehicles with steel bodies. After exposure to air for a period of not less than 10 days, these articles may be offered for transportation by carrier by water in bulk in all-steel barges having open holds.

(d) Spent oxide, spent iron sponge, or spent iron mass must not be offered for transportation by carrier by rail express.

**§ 73.175 Lacquer base, or lacquer chips, dry.**

(a) Lacquer base, or lacquer chips, dry, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside metal containers, spec. 2F (§ 78.25 of this chapter).

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(3) Spec. 17E, 17H, 37A, 37B, or 37C (§ 78.116, 78.118, 78.131, 78.132, or 78.135 of this chapter). Metal drums (single-trip), or spec. 37C (non-reusable container).

(4) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized net weight not over 225 pounds.

**§ 73.176 Matches.**

(a) Matches, when offered for transportation, must be of a type that will not ignite spontaneously when subjected for eight consecutive hours to a temperature of 200° F., in a properly conducted laboratory test. They must not exceed 3 inches in length, nor have a stick exceeding .015 square inch in cross-section area.

(b) For the purpose of Parts 71–78 of this chapter, matches are divided into two classes, viz: (1) "strike-anywhere" and block matches and (2) "strike-on-box," book, and card matches. Strike-anywhere and block matches are those for the ignition of which a prepared surface is not required. Strike-on-box, book, and card matches are those matches intended to be ignited on a prepared surface. Book and card matches may be fastened to a cover or folder, or the prepared match strips may not be so attached or covered.

(c) Packing. Matches, strike-anywhere, must not be packed in the same outside package with any other article, except that book, card and "strike-on-box" matches may be included when packed in separate inside containers.

(1) Matches, strike-anywhere, must be placed in individual containers consisting of an outer sliding shuck or cover and an inner holding tray or box, or securely closed chipboard or fiberboard boxes. Individual containers consisting of a holding tray or box with a top that telescopes over the box may be used. Boxes of suitable "hang-up" type may also be used if approved by the Bureau of Explosives. All match boxes, covers, and trays must be made of cardboard, wood, or metal, except that paper wrappings may be used for block or card matches.

(2) Individual containers must be wrapped in paper with not more than 12 boxes or individual containers in each paper-wrapped package, except that paper wrapping is not required for boxes that have a center holding or protecting

strip of cardboard of the size and type detailed in subparagraph (3) of this paragraph placed over the matches in the manner specified or as otherwise provided herein. Paper-wrapped packages must be secured on the ends and on the lapping side with glue, or similar satisfactory adhesive, making each 12 boxes or less of matches a serviceably wrapped and well secured package. Chipboard or fiberboard boxes constructed of material not less than 0.018 inch thick, having flaps secured by adhesive or closed by specially designed flaps or tabs formed to secure tight closures, are not required to be wrapped in paper.

(3) No individual container (not including card or block matches) shall contain more than 700 strike-anywhere matches in any one container, box, or package. When more than 300 matches are packed in any individual container, box, or package, the matches must be arranged in two nearly equal portions with the heads of the two portions placed in opposite directions. All individual containers containing 350 or more matches must have placed over the matches a center holding or protecting strip made of cardboard, which can be scored or bent without fracture, except the center holding strip shall not be required when matches are packed in chipboard or fiberboard boxes detailed in subparagraph (2) of this paragraph. This protecting strip shall be not less than 1¼ inches wide and shall be flanged down at least ⅝ inch on each end to hold the matches in position when the container is nested into the shuck or cover or withdrawn therefrom.

(d) Matches, unless exempted in paragraph (g) of this section, when offered for transportation by carriers by rail freight, highway, or water must be packed in specification containers as follows:

(1) Spec. 15A (§ 78.168 of this chapter). Wooden boxes, with inside containers; not over 100 pounds each.

(2) Spec. 12B or 12C (§ 78.205 or § 78.206 of this chapter). Fiberboard boxes with inside containers; not over 60 pounds each. Fill-in pieces specified by § 78.205–14 or § 78.206–14 of this chapter shall not be required.

(3) The maximum number of match boxes contained in any one case shall be as follows:

| Number of boxes | Nominal number of matches per box |
|---|---|
| ½ gross | Not over 700. |
| 1 gross | Not over 500. |
| 2 gross | Not over 400. |
| 3 gross | Not over 300. |
| 5 gross | Not over 200. |
| 12 gross | Not over 100. |
| 20 gross | Over 50. |
| | Under 100. |
| 25 gross | Not over 50. |

(e) All individual containers of strike-anywhere matches when offered for transportation by rail express must be packed in specification containers as follows:

(1) Spec. 15A (§ 78.168 of this chapter). Wooden boxes, lined, spec. 2F (§ 78.25 of this chapter), or lined with asbestos board, lapped at all joints and all joints sealed air-tight. Gross weight not to exceed 50 pounds.

(2) Spec. 12C (§ 78.206 of this chapter). Fiberboard boxes with paper-wrapped units of strike-anywhere matches covered with aluminum foil having joints hermetically sealed. Aluminum used for covering must be of such thickness that in the event matches become ignited fire will not communicate through the wrapped unit. Gross weight not to exceed 50 pounds.

(f) Marking. Outside containers of strike-anywhere matches shall show the name of the importer, distributor, or manufacturer and the brand or trademark under which such matches are manufactured and distributed to the trade. The name shall be printed in English.

(1) In addition, and separate therefrom, all outside containers shall have plainly marked thereon the words "STRIKE-ANYWHERE MATCHES".

(g) Matches, strike-on-box, book, and card packed in outside fiberboard or wooden boxes are not subject to the regulations in Parts 71–78 and 197 of this chapter.

(1) Matches, strike-on-box, book, and card may be packed in the same outside container with nonflammable articles when packed in outside fiberboard or wooden boxes. Such matches must be compactly packed in tightly closed inside containers or securely wrapped so as to prevent accidental ignition. When so packed, they are exempt from specification packaging, marking, and labeling requirements except when for transportation by carrier by water each outside container shall be marked "BOOK MATCHES," "STRIKE-ON-BOX MATCHES," or "CARD MATCHES," as the case may be. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

### § 73.177 Motion-picture film and X-ray film.

(a) Motion-picture film and X-ray film (nitrocellulose base) (exposed) must be packed in specification containers as follows:

(1) Spec. 32A or 32B (§§ 78.146 or 78.147 of this chapter). Metal cases.

(2) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Wooden boxes with each reel in a tightly closed metal can, or strong cardboard or fiberboard box with cover held in place by adhesive tape or paper; gross weight not over 200 pounds.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes complying with § 78.205–22 (a) (1) of this chapter; authorized for a single tightly closed inside metal can or strong cardboard or fiberboard box with cover held in place by adhesive tape or paper, not over 2,000 feet of film. Taped closure authorized.

(4) Spec. 12B (§ 78.205 of this chapter). One-piece fiberboard boxes complying with § 78.205–22 (a) (2) of this chapter; authorized only when each film is in a tightly closed metal film-reel can or strong cardboard or fiberboard box with cover held in place by adhesive tape or paper containing not over 2,000 feet (approximately) of film; cans or boxes to be adequately braced in center of box by fiberboard, at least 175-pound test, extending full depth of box. Gross weight not over 65 pounds. Closing of box must be effected by coating entire contact surfaces of flaps with efficient adhesive; stitched closure not authorized. Boxes that have been filled, shipped, and opened, are not authorized for reuse.

**Note 1:** Because of the present emergency and until further order of the Commission, containers authorized under § 73.180 (a) (2) may be reused provided original shipment consisted of unexposed motion-picture film in carload or truckload quantities and that boxes were crated and had closing flaps held in place by paper tape.

(5) Spec. 32C (§ 78.148 of this chapter). Trunks with each film in standard metal film-reel can or strong cardboard or fiberboard box with cover held in place by adhesive tape or paper. Trunks to contain no material other than films in cans or boxes and projecting apparatus. The apparatus, as packed, must not be capable of creating an electric current.

(6) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes complying with § 78.205–27 of this chapter; authorized only for not more than two square inside metal cans containing not over 200 feet (approx.) of film each; gross weight not over 15 pounds. Taped closure authorized.

(b) Advertising matter must not be attached to outside of container. Slow burning (nonflammable) motion-picture film is exempt (§ 73.181 (a) (1)), but when packed with flammable film all requirements must be complied with as if all contents were flammable film.

### § 73.178 Motion-picture film, old and worn out (not scrap).

(a) Motion-picture film, old and worn out (not scrap), when shipped, must be no longer exhibitable (with value only for reclamation of material) and must be packed in specification containers as follows: (See §§ 73.195 and 73.196 for film scrap.)

(1) Spec. 15A (§ 78.168 of this chapter). Wooden boxes lined, spec. 2F (§ 78.25 of this chapter), or 2M (§ 78.31 of this chapter); gross weight not over 450 pounds.

(2) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside metal cans containing not over 1,000 feet of film; the cover of each can must fit tightly; gross weight not over 450 pounds.

(3) Spec. 32A or 32B (§§ 78.146 or 78.147 of this chapter). Metal boxes.

(4) Spec. 32D (§ 78.149 of this chapter). Metal boxes. Net weight of film not over 250 pounds.

(5) Spec. 6A, 6B, 6C, or 6J; also 37A or 37B (single-trip containers) (§§ 78.97, 78.98, 78.99, 78.100, 78.131, or § 78.132 of this chapter). Metal barrels or drums.

(6) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized net weight not over 225 pounds.

### § 73.179 Motion-picture film, toy.

(a) Motion-picture film, toy, of standard width (1⅜"), on metal reels, each

containing 200 feet or less of film, when shipped must be inclosed in spark-proof metal cans packed in outside specification containers as follows:

(1) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Wooden boxes; maximum gross weight 250 pounds. (See § 73.181 (a) (3) for toy motion-picture film pieces.)

§ 73.180 Motion-picture film, and X-ray film, unexposed.

(a) Motion-picture film, and X-ray film, unexposed (nitrocellulose base), when offered for transportation by rail express or by carrier by water must bear the yellow label prescribed in § 73.406 and must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, or 16A (§§ 78.168, 78.169, 78.170, or 78.185 of this chapter). Wooden boxes, provided it is in tight rolls of not over 3,000 feet; each roll must be in a tightly closed metal can with cover held in place by adhesive tape or paper, or each roll must be in a strong cardboard or fiberboard box with cover held in place by adhesive tape or paper. Gross weight not over 250 pounds.

(2) Spec. 12B (§ 78.205 of this chapter). One-piece fiberboard boxes complying with § 78.205–22 (a) (2) of this chapter; authorized only when each film is in a tightly closed metal can or in a strong cardboard or fiberboard box with cover of can or box held in place by adhesive tape or paper and containing not over 2,000 feet (approx.) of film; interior packing required, of double-wall corrugated fiberboard pads at least 275-pound test, so arranged as to prevent can or box from touching the 6 faces of the outside box. Gross weight not over 75 pounds. Boxes that have been filled, shipped and opened are not authorized for reuse.

(b) Motion-picture film and X-ray film, unexposed (nitrocellulose base), when offered for transportation by rail freight and highway are exempt from specification packaging, marking other than name of contents, and labeling requirements. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

§ 73.181 Motion-picture film; exemptions.

(a) Motion-picture film as follows is exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(1) Motion-picture film and X-ray film, slow-burning (nonflammable) and old and wornout motion-picture film, slow-burning (nonflammable).

(2) Motion-picture film scrap and X-ray film scrap, slow-burning (nonflammable).

(3) Motion-picture film, toy pieces of, exposed, of approximately ¾ inch by 1⅜ inches in size and not to exceed 1,000 such pieces inclosed in a tightly closed metal box and packed with other articles.

(4) Motion-picture outfits, toy, consisting of one projecting apparatus and not to exceed one roll of motion-picture film 12 feet or less in length, may be accepted without further restrictions, provided the film is packed in a securely closed metal can or box, this inclosed in a wooden box and packed with the projection apparatus in an outside fiberboard, corrugated strawboard, or wooden box.

§ 73.182 Nitrates.

(a) Aluminum nitrate, ammonium nitrate, ammonium nitrate (organic coating), ammonium nitrate—carbonate mixture, ammonium nitrate—phosphate,[1] ammonium nitrate fertilizer, containing 90 percent or more ammonium nitrate with no organic coating, ammonium nitrate mixed fertilizer,[2] barium nitrate, calcium nitrate, guanidine nitrate, lead nitrate, magnesium nitrate, nitrates, n.o.s., nitrate of soda and potash, nitro carbo nitrate (see Note 1), potassium nitrate, silver nitrate, sodium nitrate, and strontium nitrate, when offered for transportation by rail freight, rail express, highway, or carriers by water shall be packed in containers as follows:

(1) Wooden or fiberboard boxes with glass, metal, or other strong inside containers; in metal or fiber drums; in kegs or barrels; or in strong metal cans. When so packed, they are exempt from specification packaging, marking other than name of contents, and labeling requirements when for transportation by rail or highway. Ammonium nitrate-carbonate mixtures, nitrocarbonitrate, and ammonium nitrate mixed fertilizers so packed are exempt from labeling requirements when for transportation by water carrier. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

NOTE 1: Nitro carbo nitrate is a mixture consisting substantially of inorganic nitrates and carbonaceous materials, in which none of the ingredients are explosive as defined in this part and which as packaged for shipment cannot be detonated by means of a No. 8 test blasting cap as described herein. (A No. 8 test blasting cap is one containing two grams of a mixture of 80 percent mercury fulminate and 20 percent potassium chlorate, or a cap of equivalent strength.)

(b) Aluminum nitrate, ammonium nitrate, ammonium nitrate (organic coating), ammonium nitrate-carbonate mixture, ammonium nitrate-phosphate,[2] ammonium nitrate fertilizer, containing 90 percent or more ammonium nitrate with no organic coating, ammonium nitrate mixed fertilizer,[1] barium nitrate, calcium nitrate, guanidine nitrate, nitrate of soda and potash, potassium nitrate, sodium nitrate, and strontium nitrate, when offered for transportation by rail freight, rail express, highway, or carriers by water, in addition to containers prescribed in paragraph (a) of this section, may be packed as follows:

(1) In bulk in tight closed freight cars. (See § 74.532 (k) of this chapter for loading requirements.)

(2) In bulk in sift proof closed or open type motor vehicles. (See § 77.838 (f) of this chapter for loading requirements.)

(3) In bulk on cargo vessels subject to the Regulations for Explosives or Other Dangerous Articles on Board Vessels prescribed by the Commandant, United States Coast Guard (46 CFR Part 146).

(4) In burlap bags not exceeding 200 pounds net weight, water-resistant, made tight against sifting, and made of not less than 7½-ounce burlap. Ammonium nitrate-carbonate mixtures, calcium nitrate, potassium nitrate, sodium nitrate, nitrate of soda and potash, or strontium nitrate when so packed are exempt from labeling requirements and § 77.823 of this chapter. For water shipments see Regulations for Explosives or Other Dangerous Articles on Board Vessels prescribed by the Commandant United States Coast Guard (46 CFR Part 146). (See §§ 74.532 and 77.838 of this chapter for loading requirements.)

(5) In multi-wall paper bags not exceeding 110 pounds net weight, of at least 4-ply construction including moisture-barrier ply, and made tight against sifting. Completed package, filled to weight with product and closed for shipment, must be capable of withstanding three 4-foot drops on face or back onto solid concrete without rupture. Ammonium nitrate-carbonate mixtures, calcium nitrate, potassium nitrate, sodium nitrate, nitrate of soda and potash, or strontium nitrate when so packed are exempt from labeling requirements and § 77.823 of this chapter. For water shipments see Regulations for Explosives or Other Dangerous Articles on Board Vessels prescribed by the Commandant United States Coast Guard (46 CFR Part 146). (See §§ 74.532 and 77.838 of this chapter for loading requirements.)

(6) Plastic bags which must be securely closed. Authorized net weight not over 81 pounds. Shipper must submit complete details of resin from which bags are made and obtain approval from the Bureau of Explosives prior to use and reference to such approval must be made on shipping paper. Authorized only for ammonium nitrate fertilizer containing 90 percent or more ammonium nitrate with no organic coating. (See §§ 74.532 and 77.838 of this chapter for loading requirements.)

(c) Nitro carbo nitrate, in addition to the containers prescribed in paragraph (a) of this section, may be packed as follows:

(1) In burlap bags not exceeding 100 pounds net weight, water-resistant, made tight against sifting, and made of not less than 7½-ounce burlap. (See §§ 74.532 and 77.838 of this chapter for loading requirements.)

(2) In multiwall paper bags not exceeding 100 pounds net weight, made of at least 4-ply construction including moisture-barrier ply, and made tight against sifting. Completed package, filled to weight with product and closed as for shipment, must be capable of

[1] Applies only to materials classed as dangerous under definition in § 73.150.

[2] Applies only to materials classed as dangerous under definition in § 73.151.

withstanding three 4-foot drops on the face or back onto solid concrete without rupture. (See §§ 74.532 and 77.838 of this chapter for loading requirements.)

**§ 73.183 Potassium nitrate mixed (fused) with sodium nitrite.**

(a) Potassium nitrate mixed (fused) with sodium nitrite must be packed in containers as follows:

(1) In containers as prescribed in § 73.182 (a).

(2) Spec. 103–W (§ 78.280 of this chapter). Tank cars specially designed, equipped and approved for this service without bottom discharge outlet and with heavier plate thicknesses than the minimum prescribed for cars built under this specification. For specification 103–W tank cars made of plates having the minimum prescribed thicknesses, internal reinforcement of the upper sheets of tank in the region of the dome and reinforcing plates attached to the bottom sheet of the tank which rests on bolsters is required, and these tanks must be equipped with baffle plates. Heater pipes must be of welded construction designed for a test pressure of 500 pounds per square inch. A 1-inch woven asbestos lining must be placed between bolster slabbing and bottom of tank to prevent heat transmission. Safety vents of the frangible disc type may be used and if used the frangible discs must be perforated with ⅛ inch hole. If safety valves are used, a vacuum relief valve must be installed on the dome. Tanks must be stenciled on both sides "Fused Potassium Nitrate and Sodium Nitrite Only".

**§ 73.184 Nitrocellulose or collodion cotton, wet, or nitrocellulose, colloided, granular, or flake, wet, or nitrostarch, wet, or nitroguanidine, wet.**

(a) Nitrocellulose or collodion cotton, wet, or nitrocellulose, colloided, granular, or flake, wet, or nitrostarch, wet, or nitroguanidine, wet, must be uniformly wet with at least 20 pounds of water to 80 pounds of dry material and must be packed in specification containers as follows:

(1) Spec. 10A or 10B (§§ 78.155 or 78.156 of this chapter). Wooden barrels or kegs.

(2) Spec. 14, 15A, or 15B (§ 78.165, § 78.168, or § 78.169 of this chapter). Wooden boxes lined, spec. 2M (§ 78.31 of this chapter).

(3) Spec. 6A, 6B, 6C, or 6J (§ 78.97, § 78.98, § 78.99, or § 78.100 of this chapter). Metal barrels or drums not over 55 gallons capacity. Spec. 6J (§ 78.100 of this chapter) drums must have removable heads of 14 gauge metal or 16 gauge metal with one or more corrugations near the periphery and heads must have a minimum convexity of ⅜ inch; each drum must have three rolled or swedged-in hoops, one of which shall be in the body near the top curl.

(4) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter). Metal drums (single-trip) not over 5 gallons capacity. Welded side seams required.

(5) Spec. 17E or 17H (§§ 78.116 or 78.118 of this chapter). Metal drums (single-trip).

(6) Spec. 42F (§ 78.110 of this chapter). Aluminum barrels or drums.

(b) Gross weight of any container must not exceed 490 pounds.

**§ 73.185 Paper stock, wet.**

(a) Paper stock, wet must be packed in hermetically sealed metal-lined wooden boxes or air-tight metal containers.

(b) Paper stock, wet, must not be offered for transportation by rail express.

**§ 73.186 Paper waste, wet.**

(a) Paper waste, wet, must be packed in hermetically sealed metal-lined wooden boxes or air-tight metal containers.

NOTE 1: Because of the present emergency and until further order of the Commission, paper waste, wet, free from oil or other foreign matter liable to cause spontaneous ignition may be shipped in bales.

(b) Paper waste, wet, must not be offered for transportation by rail express.

**§ 73.187 Peroxide of sodium.**

(a) Peroxide of sodium must be packed in specification containers as follows:

(1) Spec. 11A, 11B, 15A, 15B, 15C, 16A, or 19A (§§ 78.160, 78.161, 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden barrels, kegs, or boxes, with inside containers which must be airtight metal cans.

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(3) Spec. 17E, 17H, 37A, or 37B (§§ 78.116, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip).

(4) Spec. 12A or 12B (§ 78.210 or 78.205 of this chapter). Fiberboard boxes with inside air-tight metal cans not over 5 pounds capacity each.

**§ 73.188 Phosphoric anhydride.**

(a) Phosphoric anhydride must be packed in specification containers as follows:

(1) Spec. 11A, 11B, 15A, 15B, or 15C (§§ 78.160, 78.161, 78.168, 78.169, or 78.170 of this chapter). Wooden barrels, kegs, or boxes, with inside containers which must be tightly stoppered glass bottles not over 1 pound capacity each; or metal cans, not over 3 pounds capacity each, hermetically sealed (soldered) or closed with cork securely held in place by metal strap soldered in position. All inside containers must be cushioned with elastic incombustible packing material.

NOTE 1: Because of the present emergency and until further order of the Commission, metal cans not over 6 pounds capacity each are authorized.

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(3) Spec. 17E, 17H, 37A, or 37B (§§ 78.116, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip).

(4) Spec. 6K (§ 78.101 of this chapter). Metal drums. Authorized only for carload or truckload shipments by rail freight or highway when loaded by the shipper and unloaded by the consignee or his duly authorized agent.

(5) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 1 pound capacity each. Not more than 12 bottles shall be packed in one outside box. Shipper must have established that completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(6) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles of one-third fluid ounce capacity each. Each bottle shall be packed in a heat-sealed polyethylene or other suitable plastic bag of equal efficiency and not more than 75 such units shall be packed in a heat-sealed polyethylene or other suitable plastic bag of equal efficiency, which shall be placed in a securely closed metal can. Not more than 1 can shall be packed in one outside box.

**§ 73.189 Phosphorus, amorphous, red.**

(a) Phosphorus, amorphous, red, must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes, with metal inside containers, with closures sealed air-tight and positively fastened.

(2) Spec. 6A or 6B; also 37A or 37B (single-trip containers) (§§ 78.97, 78.98, 78.131, or § 78.132 of this chapter), for gross weight not over 160 pounds. Metal barrels or drums.

(3) Spec. 29 (§ 78.226 of this chapter). Mailing tube having not more than 100 grams of phosphorous contained in an inside glass container, sealed under nitrogen or other inert gas, with an air tight closure. The glass container shall be packed in a metal can having air tight closure. Both the inside glass container and the metal can shall be surrounded on all sides with incombustible cushioning material.

**§ 73.190 Phosphorus, white or yellow.**

(a) Phosphorus, white or yellow, when offered for transportation by carriers by rail freight, highway, or water may only be packed in water or dry.

(b) When placed in water it must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes with inside containers, which must be hermetically sealed (soldered) metal cans, inclosed in other hermetically sealed (soldered) metal cans; or hermetically sealed (soldered) metal cans, containing not over 1 pound each, inclosed in other, watertight, metal cans with screw-top closures; or hermetically sealed (soldered) metal cans, inclosed in hermetically sealed (soldered) metal box-lining, spec. 2F (§ 78.25 of this chapter).

(2) Spec. 5A, 6A, or 6B (§§ 78.81, 78.97, or 78.98 of this chapter). Metal barrels or drums, not over 30 gallons capacity each.

(3) Spec. 103,[1] 103–W, 111A60–F–1 or 111A60–W–1 (§§ 79.200, 79.201 of this chapter). Tank cars without bottom outlet for discharge of lading and with approved dome fittings, external heater systems, and with insulation at least 4 inches in thickness, except that thickness of insulation may be reduced to 2 inches

[1] Use of existing tank cars authorized, but new construction not authorized.

over external heater coils. Bottom washout nozzle of approved design may be applied. The material must be immersed in water or be blanketed with an inert gas and be loaded at a temperature not exceeding 140 F. The water must be loaded in the dome to not more than 50 percent of the capacity of the dome. After unloading, the tank must be filled to its entire capacity with an inert gas or to its entire capacity and the dome to not more than 50 percent of its capacity with water having a temperature not exceeding 140 F and placarded with the caution placard prescribed in § 74.555 of this chapter before the car is offered for return movement.

NOTE 1: Because of the present emergency and until further order of the Commission, Specification ARA–III[1] tank cars, converted as follows, are authorized for use: Without bottom discharge outlet, with insulation at least 2 inches in thickness, internal heater coils, at least one safety valve or frangible disc safety vent of approved design, and dome equipped for top unloading. Cars to be loaded and unloaded as prescribed in paragraph (b) (3) of this section. Cars to be stenciled immediately above the mark ARA–III[1] with the words "FOR PHOSPHORUS ONLY".

(4) Spec. MC 310 or MC 311 (§§ 78.330 or 78.331 of this chapter), tank motor vehicles, without bottom outlet and with insulation at least 4 inches in thickness, except that 2 inches of insulation is authorized for tanks equipped with an exterior heating jacket. Interior heating coils are not authorized. The material must be immersed in water or be blanketed with an inert gas and be loaded at a temperature not exceeding 140° F. After unloading, the tank must be filled to its entire capacity with an inert gas or to its entire capacity with water having a temperature not exceeding 140° F.

(c) Phosphorus, white or yellow, when offered for transportation by rail express must be packed in water in specification containers as follows (also authorized for transportation by carriers by rail freight, highway, or water):

(1) Spec. 15A or 15B (§§78.168 or 78.169 of this chapter). Wooden boxes with inside containers which must be hermetically sealed (soldered) metal cans, containing not over 1 pound each, inclosed in other water-tight, metal cans with screw-top closures, or with soldered closures.

(2) Samples of phosphorus, white or yellow, not to exceed 4 ounces each, placed in water in sealed metal cylinders or cans, inclosed in a wooden box, spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter), may be transported only when consigned to the laboratory of the Internal Revenue Bureau or to the Hygienic Laboratory of the Public Health Service, Washington, D. C.

(3) Spec. 29 (§ 78.226 of this chapter). Mailing tube having a watertight rigid polyethylene container in which is placed a quartz tube containing not more than 100 grams of phosphorus sealed under nitrogen or other inert gas, with the remaining space in the polyethylene container filled with water. The polyethylene container shall be cushioned within the mailing tube with incombustible cushioning material.

(d) Phosphorus, white or yellow, when dry must be cast solid and shipped in containers as follows:

(1) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums not over 30 gallons capacity each.

(2) In projectiles or bombs when shipped by, for, or to the Departments of the Army, Navy, and the Air Force of the United States Government, without bursting elements.

(e) Phosphorus, white or yellow, when dry must not be offered for transportation by rail express.

### § 73.191 Phosphorus pentachloride.

(a) Phosphorus pentachloride must be packed in specification containers as follows:

(1) Spec. 11B, 15A, 15B, 15C, 16A, or 19A (§ 78.161, § 78.168, § 78.169, § 78.170, § 78.185, or § 78.190 of this chapter). Wooden barrels, kegs, or boxes, with inside containers which must be glass or glazed earthenware containers, not over 25 pounds capacity each, cushioned with mineral packing; when inside containers are packed in the same outside container with other articles, they must be inclosed in tightly closed metal cans. Net weight of phosphorus pentachloride not over 50 pounds in each outside container.

(2) Spec. 6A, 6B, or 6C; also 37A or 37B (single-trip containers) (§§ 78.97, 78.98, 78.99, 78.131, or § 78.132 of this chapter). "Black iron" metal barrels or drums.

(3) Spec. 10A (§ 78.155 of this chapter). Wooden barrels or kegs asphaltum lined.

(4) Spec. 28A (§ 78.9 of this chapter). Metal-jacketed lead carboys.

### § 73.192 Picrate of ammonia (ammonium picrate), picric acid, trinitrobenzoic acid, and urea nitrate, wet.

(a) Picrate of ammonia (ammonium picrate), picric acid, trinitrobenzoic acid, and urea nitrate, wet with not less than 10 percent water, in quantity not exceeding 16 ounces in one outside package, may be shipped as drugs, medicines, or chemicals, when in glass bottles securely stoppered, each bottle inclosed in a strong fiber carton properly cushioned in the outside shipping case. No restrictions other than packing prescribed by this section are required when these materials are offered for transportation.

### § 73.193 Picric acid, trinitrobenzoic acid, or urea nitrate, wet.

(a) Picric acid, trinitrobenzoic acid, or urea nitrate, wet with not less than 10 percent water must be packed in specification containers as follows:

(1) Spec. 15A (§ 78.168 of this chapter). Wooden box with inside containers of tightly closed glass or earthenware, cushioned, in outside container. The net weight in an outside package must not exceed 25 pounds dry weight. (See § 73.65 (e) for shipment of wet picric acid, wet trinitrobenzoic acid and wet urea nitrate in excess of 25 pounds, and § 73.192 for exemption up to 16 ounces.)

### § 73.194 Potassium permanganate.

(a) Potassium permanganate must be packed in specification containers as follows:

(1) In containers as prescribed in § 73.154.

(2) In bulk in sift-proof, self-clearing, covered hopper or bottom outlet steel cars or in sift-proof all steel flat bottom gondola cars with fixed sides and ends equipped with water-proof and dust-proof wooden or steel covers well secured in place for all openings, or in bulk in motor vehicles with steel, sift-proof, self-clearing hopper-type or dump-type bodies, with water-proof and dust-proof covers, well secured in place. Such cars, when used exclusively in this service and stenciled "FOR POTASSIUM PERMANGANATE ONLY," are not subject to the requirements of § 74.566(b) of this chapter.

### § 73.195 Pyroxylin plastic scrap, photographic film scrap, X-ray film scrap, motion-picture film scrap, or pieces of exposed or unexposed film.

(a) Pyroxylin plastic scrap, photographic film scrap, X-ray film scrap, motion-picture film scrap, or pieces of exposed or unexposed film, when offered for transportation by carrier by rail freight, highway, or water must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes lined, spec. 2F or 2M (§§ 78.25 or 78.31 of this chapter); gross weight not over 450 pounds each.

(2) Spec. 6A, 6B, 6C, or 6J; also 17H, 37A, or 37B (single-trip containers) (§§ 78.97, 78.98, 78.99, 78.100, 78.118, 78.131, or § 78.132 of this chapter). Metal barrels or drums.

(3) Spec. 11B (§ 78.161 of this chapter). Wooden barrels or kegs with paper bags, spec. 2J (§ 78.28 of this chapter) as inside containers of the material; gross weight not over 375 pounds.

(4) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes. Use of this container will be permitted because of the present emergency and until further order of the Commission.

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Must be externally treated to provide protection against moisture. Authorized net weight not over 225 pounds.

(b) Pyroxylin plastic scrap, photographic film scrap, X-ray film scrap, motion picture film scrap, or pieces of exposed or unexposed film which show evidence of decomposition or instability or are liable to decompose or become unstable must be packed submerged in water in specification containers as follows:

(1) Spec. 6A, 6B, or 6C; or 17H (single-trip) (§ 78.97, § 78.98, § 78.99, or § 78.118 of this chapter). Metal barrels or drums.

(2) Spec. 15A, 15B, or 15C (§ 78.168, § 78.169, or § 78.170 of this chapter). Wooden boxes with tightly closed inside metal containers.

[1] Use of existing tank cars authorized, but new construction not authorized.

**§ 73.196 Pyroxylin plastic scrap, photographic film scrap, X-ray film scrap, motion-picture film scrap, or pieces of exposed or unexposed film, shipments by rail express.**

(a) Pyroxylin plastic scrap, photographic film scrap, X-ray film scrap, motion-picture film scrap, or pieces of exposed or unexposed film, except samples for laboratory examination, must not be offered for transportation by rail express.

(b) Samples for laboratory examination when offered for transportation by rail express must be packed in specification containers as follows:

(1) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Wooden boxes with inside metal container, hermetically sealed by soldering or with tape. Net weight not over 25 pounds; shipments must be marked "Sample of (name of article) for laboratory examination".

**§ 73.197 Pyroxylin plastics, in sheets, rolls, rods, or tubes.**

(a) Pyroxylin plastics, in sheets, rolls, rods, or tubes containing nitrocellulose is not subject to Parts 71–78 and 197 of this chapter when offered for transportation by carriers by rail freight or highway but when offered for transportation by carriers by rail express or water must be packed in specification containers as follows and must bear the yellow label:

(1) Spec. 15A, 15B, or 19A (§§ 78.168, 78.169, or 78.190 of this chapter). Wooden boxes.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes. Special boxes §§ 78.205–20 and 78.205–21 authorized only for pyroxylin in sheets, rods or tubes.

(3) Sheets rolled, in spec. 21C (§ 78.224 of this chapter) fiber drums, having 2 straps applied lengthwise and one or more circumferentially; straps at least ½ by 0.02 inch steel. Authorized net weight not over 225 pounds.

(4) Sheets, rolled, not over 15 pounds net weight in fiber tubes lined throughout with singlefaced corrugated fiberboard at least 0.2 inch thick and securely closed; tube material at least 0.115 inch thick for side walls and 0.05 inch thick for ends with strength, Mullen or Cady test, at least 245 and 220 pounds respectively; metal ends for tubes acceptable when lined with fiber discs at least 0.05 inch thick.

(b) Pyroxylin plastics in manufactured articles or articles made therefrom is not subject to Parts 71–78 and 197 of this chapter.

**§ 73.197a Smokeless powder for small arms.**

(a) Smokeless powder for small arms in quantities not exceeding 100 pounds net weight in one car or motor vehicle shall be classed as a flammable solid for purposes of transportation when approved for such classification by the Bureau of Explosives. Maximum quantity in any inside container must not exceed eight pounds and inside containers must be arranged and protected so as to prevent simultaneous ignition of the contents. The complete package must be a type approved by the Bureau of Explosives. Each outside shipping container shall be labeled as prescribed in § 73.402 (a) (2).

**§ 73.198 Sodium hydride.**

(a) Sodium hydride must be packed in specification containers as follows:

(1) In containers as prescribed in § 73.206 (a) (1) and (a) (2).

(2) Spec. 17H (§ 78.118 of this chapter). Metal drums (single-trip).

(3) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter). Metal drums (single-trip) with welded side seams and hermetically sealed closure or closure made fast by positive pressure of the lid against a rubber gasket with edge of the lid crimped over the lip of the drum and a protective metal ring fastened around the crimped edge, packed in strong outside wooden boxes.

**§ 73.199 Rags, oily.**

(a) Rags, oily, with more than 5 percent of vegetable or animal oil, must be packed in hermetically sealed metal-lined wooden boxes, or air-tight metal containers.

(b) Rags, oily, as described above, must not be offered for transportation by rail express.

**§ 73.200 Rags, wet.**

(a) Rags, wet, must be packed in hermetically sealed metal-lined wooden boxes, or air-tight metal containers.

(b) Rags, wet, must not be offered for transportation by rail express.

**§ 73.201 Rubber scrap, rubber buffings, reclaimed rubber, or regenerated rubber.**

(a) Rubber scrap, if ground, powdered, or pulverized, and the rubber content of which exceeds 45 percent, as determined by subtracting the sum of the percentage of ash and the percentage of acetone extract from 100; rubber buffings from any grade of rubber, irrespective of the percentage of rubber content; and reclaimed rubber or regenerated rubber, must be packed in specification containers as follows (see paragraph (b) of this section):

(1) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 15A (§ 78.168 of this chapter). Wooden boxes lined, spec. 2F (§ 78.25 of this chapter), or 2M (§ 78.31 of this chapter).

(3) Spec. 10A (§ 78.155 of this chapter). Wooden barrels or kegs.

(4) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes.

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized net weight not over 225 pounds.

(6) Spec. 22A (§ 78.196 of this chapter). Wooden drums.

(7) Tank cars tightly and securely closed.

(8) Spec. 36A, 36B, 36C, 44B, or 44E (§§ 78.230, 78.233, 78.234, 78.236, or 78.239 of this chapter). Bags.

(b) Rubber scrap, reclaimed rubber, or regenerated rubber are not subject to Parts 71–78 and 197 of this chapter if shipped in the following forms:

(1) Rubber scrap, not ground or ground with cord or fabric insertion, or ground without cord or fabric insertion the particles of which pass over a screen of not less than 5-mesh.

(2) Reclaimed rubber or regenerated rubber when in the form of dense homogeneous nonporous sheets or rolls, the sheets of thickness of ⅛ inch or greater, packed flat or in rolls, or in pelletized form if not less than ¼ inch in diameter, or ground, the particles of which pass over a screen of not less than 5-mesh, all properly cooled before shipment.

(3) Rubber scrap, reclaimed rubber, or regenerated rubber in any form when shipped in covered steel hopper cars, tank cars, or tank or hopper trucks.

**§ 73.202 Sodium and potassium, metallic liquid alloy.**

(a) Sodium and potassium, metallic liquid alloy must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§ 78.168 or § 78.169 of this chapter). Wooden boxes with inside metal containers of a type approved by the Bureau of Explosives cushioned with incombustible cushioning material. Each container must have been tested hydrostatically to a pressure of not less than 60 pounds per square inch. Closing devices must be protected from injury. Not more than 300 pounds of sodium or potassium liquid alloy may be shipped in one outside container.

(2) Spec. 5A (§ 78.81 of this chapter), metal barrels or drums not exceeding 400 pounds capacity each, having protruding valves protected by a 12-gauge steel dome securely attached to the head of the drum. Shipments are authorized by rail freight in carload lots only and by motor vehicle in truckload lots only.

**§ 73.203 Tetranitromethane.**

(a) Tetranitromethane must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes, gross weight not exceeding 150 pounds, with inside containers which must be: glass bottles not more than 1 quart capacity each, with closures securely fastened and of a type not deteriorated by the contents, each bottle individually packed in a tight metal container and cushioned therein with absorbent incombustible material; or aluminum cans or polyethylene bottles, not more than 5 pounds capacity each, with opening not more than 1.25 inches diameter, fitted with securely fastened screw type closures and gaskets of material not deteriorated by contact with the contents, cushioned with not less than 2 inches of absorbent incombustible cushioning material between the inside containers and any part of the wooden box.

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums, with inside stainless steel or aluminum drum (or drums) having no

opening exceeding 2.5 inches diameter, openings to be securely closed by a screw type gasketed device, with gaskets of material not deteriorated by contact with the contents. The inside drum (or drums) must be cushioned with not less than 2 inches of absorbent incombustible cushioning material; inside drums shall be of not less than 20 gauge metal and shall be tested for leakage before packing in the outside drum.

**§ 73.204 Sodium hydrosulfite.**

(a) Sodium hydrosulfite must be packed in specification containers as follows:

(1) Spec. 11A, 11B, 15A, 15B, 15C, 16A, or 19A (§§ 78.160, 78.161, 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden barrels, kegs, or boxes with inside glass bottles of capacity not exceeding 5 pounds each, or metal containers.

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(3) Spec. 17E, 17H, or 37K (§§ 78.116, 78.118, or 78.130 of this chapter). Metal drums (single-trip).

(4) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter). Metal drums (single-trip). These containers are not authorized for transportation by carriers by water.

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drums with inside metal drums. Authorized net weight not over 225 pounds.

(6) Spec. 21C (§ 78.224 of this chapter). Fiber drums constructed for a net weight of 225 pounds; authorized net weight of product not over 250 pounds; drums must have a metal foil (laminated between two sheets of kraft paper with thermoplastic adhesive) moisture and water barrier wound into the sidewall of the drum and located not more than 2 plies from the interior of drum but not to be wound as the first ply; a metal foil moisture and water barrier must also be present in the fiber or wood heading; exterior of drum sidewall must be protected with a water resistant coating; in addition to the tests prescribed by § 78.224–2 (a), (b), and (c) of this chapter, a drum having been given a 4-foot diagonal bottom chime drop must, after being emptied, withstand complete immersion of the bottom in 6 inches of water for 4 hours without leakage to the interior; drums must not be offered for transportation by carriers by water.

(7) Spec. 22B (§ 78.197 of this chapter). Plywood drums with inside metal drums.

NOTE 1: Because of the present emergency and until further order of the Commission, the use of inside metal drums will not be required but in lieu thereof the drum must be lined or otherwise treated so as to prevent the entrance of moisture in quantities sufficient to create a hazardous condition in transportation. Maximum loaded capacity 110 pounds net.

**§ 73.205 Sodium picramate, wet.**

(a) Sodium picramate must be wet with not less than 20 percent of water by weight and packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with well stoppered glass inside containers of not exceeding 1 quart capacity each, cushioned in the boxes.

(2) Spec. 10A or 10B (§§ 78.155 or 78.156 of this chapter). Wooden barrels, or kegs.

**§ 73.206 Sodium or potassium, metallic, sodium amide, sodium potassium alloys, sodium aluminum hydride, lithium metal, lithium silicon, lithium hydride, and lithium aluminum hydride.**

(a) Sodium or potassium, metallic, sodium amide, sodium potassium alloys, sodium aluminum hydride, lithium metal, lithium silicon, lithium hydride, and lithium aluminum hydride, must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§ 78.168 or § 78.169 of this chapter). Wooden boxes with air-tight metal inside containers which must have closing device securely fastened by positive means (not friction). Inside metal cans with closures securely fastened, positive means not required, must not exceed 1-gallon capacity each for lithium aluminum hydride and must be cushioned in outside containers with sufficient incombustible packing material.

(2) Spec. 5, 6A, 6B, or 6C (§ 78.80, § 78.97, § 78.98 or § 78.99 of this chapter). Metal barrels or drums. Not authorized for lithium aluminum hydride.

(3) Spec. 17E, 17H, 37A, or 37B (§§ 78.116, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip). Authorized only for lithium metal or sodium, metallic which must be fused solid in the container.

(4) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter). Metal drums (single-trip) not exceeding 6 gallons capacity each, with welded side seams and hermetically sealed closure or closure made fast by positive pressure of the lid against a rubber gasket with edge of the lid crimped over the lip of the drum and a protective metal ring fastened around the crimped edge, cushioned on all sides with incombustible packing material, packed in strong outside wooden boxes (see § 73.25). Not more than four inside metal drums shall be packed in one outside wooden box.

(5) Spec. 17C (§ 78.115 of this chapter), metal drums (single-trip). Not authorized for lithium aluminum hydride.

(6) Spec. 17H or 37A (§ 78.118 or § 78.131 of this chapter). Metal drums (single-trip), with air-tight metal inside containers which must have closing device securely fastened by positive means (not friction). Inside metal containers must be cushioned on all sides by incombustible packing material. Authorized for lithium metal or lithium hydride only.

(7) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes constructed of at least 375-pound test (Mullen or Cady) solid fiberboard with inside airtight metal container which must have a closing device securely fastened by positive means (not friction). Each inside metal container must be individually nested into a double-faced corrugated partition of at least 200-pound test (Mullen or Cady) which is in turn surrounded on all sides by a peripheral double-walled corrugated liner of at least 200-pound test (Mullen or Cady). Authorized gross weight not over 90 pounds.

(8) Spec. 21C (§ 78.224 of this chapter). Fiber drums constructed for 400 pounds net weight, with the material packed not more than 5 pounds net weight each in not to exceed one-half gallon steel cans equipped with friction-top closures. Authorized for lithium ferro silicon only.

(b) Sodium or potassium, metallic, sodium amide, and lithium metal, immersed in neutral oil may also be shipped when packed in specification containers as follows:

(1) Spec. 15A or 15B (§ 78.168 or § 78.169 of this chapter). Wooden boxes with inside metal drums, spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter) single-trip, having welded side seams, net weight not over 30 pounds, or with inside glass containers, each enclosed in a tin container.

(2) Spec. 17H (§ 78.118 of this chapter). Metal drum (single-trip). Authorized only for lithium metal in the form of cups or ingots.

(c) Sodium, metallic, may also be shipped when packed in specification containers as follows:

(1) Spec. 105A300–W (§ 78.286 of this chapter). Tank cars, having exterior heater coils fusion welded to tank shell and properly stress-relieved, the material to be in molten condition when loaded into the tank and allowed to solidify before car is offered to the carrier. Outage must be 5 percent or more for sodium at fusion temperature of 208° F.

(2) Spec. 17C, 17H, 37A, or 37B (§§ 78.115, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip) authorized for cylindrical blocks at least 2 inches in diameter and not less than 6 inches in length, or rectangular blocks not less than 6 inches in length and not less than 2 inches in any other dimension. Net weight not over 300 pounds for spec. 17C drums; not over 30 pounds for spec. 17H, 37A, or 37B drums.

(3) Spec. MC 330 (§ 78.336 of this chapter). Tank motor vehicles having a minimum design pressure of 150 pounds per square inch and having exterior coils fusion-welded to the tank shell and properly stress-relieved. Tanks must be equipped with safety valves having a set-to-discharge pressure not exceeding 150 pounds per square inch. The material must be in molten condition when loaded and solidified before being moved over a public highway. Outage must be 5 percent or more at a sodium temperature of 208° F.

(4) Stainless steel tubes having welded end caps containing not over 50 grams of metallic sodium each. Each tube must be inserted in an aluminum carrier tube. Containers must be approved by the Bureau of Explosives.

(d) Lithium metal in cartridges, when packed and described as follows is exempt from specification packaging and labeling requirements:

(1) In inside hermetically sealed metal cartridges not exceeding 18 grams net weight each, packed in strong outside containers with net weight of lithium metal not exceeding one pound; which outside containers may be overpacked in strong wooden boxes or fiber drums, provided total net weight of lithium metal in one outside container does not exceed one pound.

(e) Lithium metal in cartridges, containing more than 18 grams but not more than 120 grams of lithium, must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§ 78.168 or § 78.169 of this chapter). Wooden boxes, not over 75 pounds gross weight, with air-tight inside copper cartridges. Cartridges having less than 0.022 inch wall thickness must be separated or securely cushioned in the boxes. Each cartridge must have a minimum thickness of 0.02 inch.

**§ 73.207 Sulfide of sodium or sulfide of potassium, fused or concentrated, when ground.**

(a) Sulfide of sodium or sulfide of potassium, fused or concentrated, when ground, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, or 16A (§§ 78.168, 78.169, 78.170, or 78.185 of this chapter). Wooden boxes with inside containers which must be glass bottles enclosed in tightly closed metal cans, or hermetically sealed (soldered) metal cans.

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, with inside containers which must be hermetically sealed (soldered) metal cans of not over 5 pounds capacity.

(b) When fused or concentrated, but not ground (may be chipped, flaked, or broken), may be shipped in specification containers as follows:

(1) Spec. 15A, 15B, 15C, or 16A (§§ 78.168, 78.169, 78.170, or 78.185 of this chapter). Wooden boxes with inside bottles of not more than 5 pounds capacity each, or metal cans, with tight covers.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers which must be metal cans of not over 5 pounds net weight each or glass bottles of not over 1 pound net weight each. Packages containing glass or earthenware containers must not weigh over 65 pounds gross.

(3) Spec. 17E, 17H, 37A, or 37B (§§ 78.116, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip).

(4) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, 78.99 of this chapter). Metal barrels or drums.

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drums which must be lined or coated, or otherwise treated so as to prevent the entrance of moisture in quantities sufficient to create a hazardous condition in transportation; maximum loaded capacity 250 pounds net.

(6) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes constructed of at least 275-pound test double-faced fiberboard and provided with a perimeter liner and bottom pad of at least 200-pound test fiberboard. Boxes constructed of at least 350-pound fiberboard having top and bottom pads shall not require perimeter liner. Product must be contained within a tightly closed polyethylene or other equally efficient plastic bag constructed of material having minimum thickness of 0.004 inch. Not more than 25 pounds net weight of product may be packed in one outside box.

(7) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 5 pounds capacity each. Not more than four bottles having capacity of 5 pounds each shall be packed in one outside box. Shipper must have established that completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(c) Sulfide of potassium, crystallized, is not subject to Parts 71–78 and 197 of this chapter.

(d) Sodium sulfide when shipped fused in one solid mass in a metal barrel or drum and sodium sulfide, crystallized, are not subject to Parts 71–78 and 197 of this chapter.

(e) Sodium sulfide containing 35 percent or more combined water by weight, fused or concentrated but not ground (may be chipped, flaked, or broken), when packed in steel barrels or drums or portable metal tanks that are equipped with moisture-tight closures, or in strong tight fiber drums having a moisture-barrier incorporated in the walls and equipped with moisture-tight closures, is not subject to Parts 71-78 and 197 of this chapter. Portable tanks filled to gross weight to be shipped must be capable of withstanding a drop from a height of 4 feet onto solid concrete without rupture or serious damage, and must be equipped with lifting devices capable of holding 4 times the gross weight of filled tank.

**§ 73.208 Titanium metal powder, wet or dry.**

(a) *Titanium metal powder, wet.* Titanium metal powder, wet, with not less than 20 percent water, must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes with inside metal cans not exceeding 1 gallon each, tightly and securely closed, and not more than 12 such inside metal cans in one outside package; or not more than 1 inside metal can of not less than 22-gauge metal and not to exceed 10 gallons capacity, tightly and securely closed.

(b) *Titanium metal powder, dry.* Titanium metal powder, dry, must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes with inside metal containers, tightly and securely closed by push-in covers, held in place by soldering at least four points, or in screw-cap metal cans. Inside containers must not exceed 10 pounds net each. Inside containers must be cushioned by incombustible material such as rock wool or asbestos wool. Gross weight of outside package must not exceed 75 pounds each.

(2) Spec. 17H or 37A (§ 78.118 or § 78.131 of this chapter). Metal barrels or drums (single-trip) with inside metal drum of not less than 20-gauge metal and with closure secured by positive means. The inside container shall be completely surrounded by not less than 1 inch of incombustible cushioning material.

(3) Spec. 5B (§ 78.82 of this chapter). Metal barrels or drums not over 15 gallons capacity.

**§ 73.209 Tankage, garbage, and tankage fertilizers.**

(a) Tankage, garbage, and tankage fertilizers, containing less than 8 percent moisture or having a temperature exceeding 100° F. when loaded must be packed in hermetically sealed metal-lined wooden boxes or air-tight metal containers.

(b) Such tankage, garbage, and tankage fertilizers, must not be offered for transportation by rail express.

**§ 73.210 Tankages, rough ammoniate.**

(a) Tankages, rough ammoniate (tankages made from ammoniates such as leather scrap, horns, hoofs, hair, hair waste, felt waste), containing less than 7 percent moisture or having a temperature exceeding 100° F. when loaded, must be packed in hermetically sealed metal-lined wooden boxes or air-tight metal containers.

(b) Tankages, rough ammoniate, must not be offered for transportation by rail express.

**§ 73.211 Textile waste, wet.**

(a) Textile waste, wet, must be packed in hermetically sealed metal-lined wooden boxes or air-tight metal containers.

(b) Textile waste, wet, must not be offered for transportation by rail express.

**§ 73.212 Trinitrobenzene and trinitrotoluene, wet.**

(a) Trinitrobenzene and trinitrotoluene, wet with not less than 10 percent water, in quantity not exceeding 16 ounces in one outside package, may be shipped as drugs, medicines, or chemicals, when in glass bottles securely stoppered, each bottle inclosed in a strong fiber carton properly cushioned in the outside shipping case and are not subject to any other requirement of Parts 71–78 and 197 of this chapter.

**§ 73.213 Wool waste, wet.**

(a) Wool waste, wet, must be packed in hermetically sealed metal-lined wooden boxes or air-tight metal containers.

(b) Wool waste, wet, must not be offered for transportation by rail express.

**§ 73.214 Hafnium metal or zirconium metal, wet, minimum 25 percent water by weight, mechanically produced, finer than 270 mesh particle size; hafnium metal or zirconium metal, dry, in an atmosphere of inert gas, mechanically produced, finer than 270 mesh particle size; hafnium metal or zirconium metal, wet, minimum 25 percent water by weight, chemically produced (see Note 1), finer than 20 mesh particle size; hafnium metal or zirconium metal, dry, in an atmosphere of inert gas, chemically produced (see Note 1), finer than 20 mesh particle size.**

NOTE 1: Produced by means other than attrition or grinding.

NOTE 2: Any product containing 10 percent or more, particle size specified, shall be subject to this section.

NOTE 3: Any product containing less than 25 percent water by weight is considered dry for purposes of these regulations.

(a) Hafnium metal, wet, mechanically produced finer than 270 mesh particle size or chemically produced finer than 20 mesh particle size with a minimum of 25 percent water by weight (a mixture of water and a suitable anti-freeze agent may be used when freezing temperatures may be encountered during transportation) must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§ 78.168 or 78.169 of this chapter) wooden boxes or spec. 6A, 6B, or 6C (§ 78.97, 78.98, or 78.99 of this chapter) metal drums with inside containers of glass or non-carbon polyethylene having net weight of not over 10 pounds each. Inside glass containers must be equipped with positive type clamp-on closures equipped with rubber gaskets. Inside polyethylene containers may have screw-cap closures equipped with gaskets ahead of thread and shall be of material which will not react with or be decomposed when in contact with contents. Screw-cap closures must be secured in place by suitable tape. Each glass or polyethylene container must be surrounded on all sides with not less than 1 inch of incombustible cushioning material and in an amount sufficient to completely absorb the entire liquid contents of the containers. Each inside glass or polyethylene container must be placed in a spec. 2A (§ 78.20 of this chapter) metal can closed with push-in cover held in place by soldering or crimping at at least four points. Authorized net weight of hafnium in one outside container shall not exceed 40 pounds for wooden boxes and shall not exceed 150 pounds for steel drums.

(2) Spec. 10A (§ 78.155 of this chapter). Wooden kegs containing not to exceed 75 pounds net each.

(b) Hafnium metal, dry, in an atmosphere of inert gas, mechanically produced finer than 270 mesh particle size or chemically produced finer than 20 mesh particle size must be packed in specification containers as follows:

(1) Spec. 6A, 6B, or 6C (§ 78.97, 78.98, or 78.99 of this chapter) or spec. 17C, 17H, or 37A (single-trip containers) (§ 78.115, 78.118, or 78.131 of this chapter). Metal barrels or drums with inside non-carbon polyethylene bottles having positive type clamp-on closures equipped with rubber gaskets, or with screw-cap closures having not less than three continuous threads and equipped with gaskets ahead of threads, not over 5 pounds net weight capacity each. Screw-cap closures must be secured in place by suitable tape. Each bottle must be placed in a spec. 2R (§ 78.34 of this chapter) metal container having a wall thickness of one-fourth inch and be completely surrounded by cushioning material. Spec. 2R containers must be separated from one another by incombustible cushioning material. Authorized net weight of metal in one outside container not over 150 pounds.

(c) Zirconium metal, wet, mechanically produced finer than 270 mesh particle size or chemically produced finer than 20 mesh particle size with a minimum of 25 percent water by weight (a mixture of water and a suitable anti-freeze agent may be used when freezing temperatures may be encountered during transportation) must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§ 78.168 or 78.169 of this chapter) wooden boxes or spec. 6A, 6B, or 6C (§ 78.97, 78.98, or 78.99 of this chapter) or 17C or 17H (single-trip containers) (§ 78.115 or 78.118 of this chapter) metal drums with inside containers of glass or non-carbon polyethylene having net weight of not over 10 pounds each. Inside glass containers must be equipped with positive type clamp-on closures equipped with rubber gaskets. Inside polyethylene containers may have screw-cap closures equipped with gaskets ahead of thread and shall be of material which will not react with or be decomposed when in contact with contents. Screw-cap closures must be secured in place by suitable tape. Each glass or polyethylene container must be surrounded on all sides with not less than 1 inch of incombustible cushioning material and in an amount sufficient to completely absorb the entire liquid contents of the containers. Each inside glass or polyethylene container must be placed in a spec. 2A (§ 78.20 of this chapter) metal can closed with push-in cover held in place by soldering or crimping at at least four points. Authorized net weight of zirconium in one outside container shall not exceed 40 pounds in wooden boxes and 150 pounds in steel drums.

(2) Spec. 10A (§ 78.155 of this chapter). Wooden kegs containing not to exceed 75 pounds net each.

(d) Zirconium metal, dry, in an atmosphere of inert gas, mechanically produced finer than 270 mesh particle size or chemically produced finer than 20 mesh particle size must be packed in specification containers as follows:

(1) Spec. 6A, 6B, or 6C (§ 78.97, 78.98, or 78.99 of this chapter) or spec. 17c, 17H, or 37A (single-trip containers) (§ 78.115, 78.118, or 78.131 of this chapter). Metal barrels or drums with inside non-carbon polyethylene bottles having positive type clamp-on closures equipped with rubber gaskets, or with screw-cap closures having not less than three continuous threads and equipped with gaskets ahead of threads, not over 5 pounds net weight capacity each. Screw-cap closures must be secured in place by suitable tape. Each bottle must be placed in a spec. 2R (§ 78.34 of this chapter) metal container having a wall thickness of one-fourth inch and be completely surrounded by cushioning material. Spec. 2R containers must be separated from one another by incombustible cushioning materials. Authorized net weight of metal in one outside container not over 150 pounds.

(e) Mechanically produced hafnium metal, coarser than 270 mesh particle size and chemically produced coarser than 20 mesh particle size in strong tight containers are not subject to Parts 71–78 and 197 of this chapter.

(f) Mechanically produced zirconium metal, coarser than 270 mesh particle size and chemically produced coarser than 20 mesh particle size in strong tight containers are not subject to Parts 71–78 and 197 of this chapter. (See § 73.220, zirconium scrap.)

**§ 73.216 Zirconium picramate, wet.**

(a) Zirconium picramate must be wet with not less than 20 percent of water by weight and packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with well stoppered glass inside containers of not exceeding 1 quart capacity each, cushioned in the boxes.

(2) Spec. 10A or 10B (§§ 78.155 or 78.156 of this chapter). Wooden barrels or kegs.

**§ 73.217 Calcium hypochlorite compounds, dry, and lithium hypochlorite compounds, dry.**

(a) Calcium hypochlorite compounds, dry, containing more than 39 percent available chlorine, and lithium hypochlorite compounds, dry, containing more than 39 percent available chlorine must be packed in specification containers as follows:

(1) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 17E, 17H, 37A, or 37B (§§ 78.116, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip).

(3) Spec. 21C (§ 78.224 of this chapter). Fiber drums with inner ply a laminated sheet of paper and aluminum foil, internally coated with not less than a 0.002 inch thickness of polyethylene. Cover of drum shall be gasketed. Authorized net weight not over 400 pounds.

(b) Strong outside wooden or fiberboard packages containing inside containers of glass, metal, or plastic bottles not over 5 pounds capacity each, except that metal inside containers not over 7½ pounds capacity each are authorized for material in tablet form only, are exempt from specification packaging, marking, and labeling when offered for transportation by rail freight, rail express, or highway. When for transportation by water, strong wooden or fiberboard containers with inside metal containers not over 5 pounds capacity each, or not over 7½ pounds capacity each of material in tablet form, are exempt from specification packaging only. Shipments for

transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

**§ 73.218 Isopropyl percarbonate, unstabilized.**

(a) Isopropyl percarbonate, unstabilized, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§ 78.168, § 78.169, § 78.170, § 78.185, or § 78.190 of this chapter). Wooden boxes, or other equally efficient container when approved by the Bureau of Explosives, with glass, metal, or earthenware inside containers of not over 2 gallons capacity each which must be maintained at a temperature below 0° F. Shipments are authorized for transportation by private or contract carrier by motor vehicle only.

**§ 73.219 Potassium perchlorate.**

(a) Potassium perchlorate must be packed as follows:

(1) As prescribed in § 73.154 (a) (1) to (11).

**§ 73.220 Magnesium or zirconium scrap consisting of borings, clippings, shavings, sheets, turnings, or scalpings, and magnesium metallic (other than scrap), powdered, pellets, turnings, or ribbon.**

(a) Magnesium or zirconium scrap consisting of borings, shavings, or turnings, when shipped in carloads or truckloads, must be packed in closed metal barrels, wooden barrels, metal pails, or four-ply paper bags. In less-than-carload or less-than-truckload quantities it must be packed in closed metal drums, metal pails, or wooden barrels.

(1) Magnesium or zirconium scrap consisting of clippings, scalpings, or scrap sheets may be shipped in bulk in carload or truckload quantities. Cars must be tight box cars or tightly closed steel covered gondola cars and trucks or trailers must have closed or completely covered bodies.

(2) Magnesium or zirconium scrap consisting of clippings, scalpings, or scrap sheets in closed metal drums, wooden barrels, or wooden boxes is exempt from specification packaging, marking, and labeling requirements. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(b) Magnesium metallic (other than scrap), powdered, pellets, turnings, or ribbon must be packed in containers as prescribed in § 73.154.

(1) Magnesium metallic (other than scrap), pellets, turnings, or ribbon in closed metal drums, metal pails, fiber drums, wooden boxes with inside containers, fiberboard boxes with inside glass bottles not over 1 pound capacity each, with not more than 25 pounds net weight of product in each outside fiberboard box are, unless otherwise provided, exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

**§ 73.221 Liquid organic peroxides, n.o.s. and liquid organic peroxide solutions, n.o.s. other than acetyl peroxide solution, acetyl benzoyl peroxide solution, cumene hydroperoxide, dicumyl peroxide, hydrogen peroxide, peracetic acid, and tertiary butylisopropyl benzene hydroperoxide.**

(a) Liquid organic peroxides, n.o.s. and liquid organic peroxide solutions, n.o.s. other than acetyl peroxide solution, acetyl benzoyl peroxide solution, cumene hydroperoxide, dicumyl peroxide, hydrogen peroxide, peracetic acid, and tertiary butylisopropyl benzene hydroperoxide must be packed in specification containers as follows:

(1) Spec. 1A or 1D (§§ 78.1 or 78.4 of this chapter). Carboys, glass, boxed, capacity not over 5 gallons for spec. 1A (§ 78.1 of this chapter), and 6.5 gallons for spec. 1D (§ 78.4 of this chapter).

(2) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers which must be glass, earthenware, or metal, not over 1 gallon each, cushioned with incombustible packing material in sufficient quantity to absorb the contents of the inner container. Metal inside containers authorized only for materials which will not react dangerously with or be decomposed by contact with metal.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard box with inside containers which must be glass, earthenware, polyethylene bottles, or metal, not over 1 gallon each. Not more than six 1-gallon polyethylene bottles; or not more than one 1-gallon glass, earthenware, or metal inside container, which must be cushioned with incombustible packing material in sufficient quantity to absorb the contents of the inner container, shall be packed in one outside fiberboard box. Metal and polyethylene inside containers authorized only for material which will not react dangerously with or be decomposed by contact with metal or polyethylene.

(4) Spec. 42B (§ 78.107 of this chapter). Aluminum drums not over 15 gallons capacity. Authorized only for peroxides which will not react dangerously with the aluminum or be decomposed by contact with it.

(5) Spec. 17C or 17E (§§ 78.115 or 78.116 of this chapter). Metal drums (single-trip) not over 15 gallons capacity. Authorized only for material which will not react dangerously with the drum metal, or be decomposed by contact with it.

(6) Spec. 22C (§ 78.198 of this chapter). Plywood drum as prescribed by § 78.198–2(a) of this chapter, with inside spec. 2T (§ 78.21 of this chapter) polyethylene container. Authorized only for material which will not react dangerously with or cause decomposition of the polyethylene.

(7) Spec. 6D or 37M (nonreusable container) (§ 78.102 or 78.134 of this chapter). Cylindrical steel overpacks with inside spec. 2S (§ 78.35 of this chapter) polyethylene container. Authorized only for material which will not react dangerously with or cause decomposition of the polyethylene.

(8) Spec. 37P (§ 78.133 of this chapter). Steel drums, not over 5-gallons capacity, with one-piece seamless molded polyethylene liner (nonreusable container). Drums exceeding 1-gallon capacity must be constructed of at least 24-gauge metal. Authorized only for materials that will not react with polyethylene and result in container failure.

(9) Spec. 12P (§ 78.211 of this chapter). Fiberboard boxes with inside spec. 2U (§ 78.24 of this chapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures.

(10) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside polyethylene bottles, not over 5-gallons capacity each, as specified by § 78.205–34 of this chapter. Not more than one bottle shall be packed in one outside box. Authorized only for material which will not react dangerously with or cause decomposition of polyethylene.

**§ 73.222 Acetyl peroxide and acetyl benzoyl peroxide, solution.**

(a) Acetyl peroxide must be shipped in solution in a non-volatile solvent and must contain not more than 25 percent by weight of the peroxide. Acetyl benzoyl peroxide must be shipped in solution in a non-volatile solvent and must contain not more than 40 percent by weight of the peroxide. They must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers which must be glass or earthenware, not over 1 gallon each, cushioned with incombustible packing material in sufficient quantity to absorb the contents of the inner container.

(2) Spec. 1A or 1D (§§ 78.1 or 78.4 of this chapter). Carboys, glass, boxed, capacity not over 5 gallons for spec. 1A (§ 78.1 of this chapter), and 6.5 gallons for spec. 1D (§ 78.4 of this chapter).

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers which must be glass or earthenware, not over 1 gallon each, cushioned with incombustible packing material in sufficient quantity to absorb the contents of the inner container. Not more than one 1-gallon inside container shall be packed in one outside fiberboard box.

(4) Spec. 12P (§ 78.211 of this chapter). Fiberboard boxes with inside spec. 2U (§ 78.24 of this chapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures.

**§ 73.223 Peracetic acid.**

(a) Peracetic acid must be shipped in solution not exceeding 40 percent strength and must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers which must be glass or earthenware, not over one gallon capacity each, cushioned with sterile absorbent cotton or other cushioning material which will not react with the contents to generate heat. Cushioning material must be in sufficient quantity to completely absorb the contents of the inner container.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers which must be glass or earthenware, not over one quart capacity each, cushioned with sterile absorbent cotton or other cushioning material which will not react with the contents to generate heat. Cushioning material must be in sufficient quantity to completely absorb the contents of the inner container.

(3) Spec. 1D (§ 78.4 of this chapter). Boxed glass carboy.

(4) Spec. 22C (§ 78.198 of this chapter). Plywood drum as prescribed by § 78.198–2(a) of this chapter, with inside spec. 2T (§ 78.21 of this chapter) polyethylene container.

(5) Spec. 37M (§ 78.134 of this chapter). Cylindrical steel overpack (nonreusable container) with inside spec. 2SL (§ 78.35a of this chapter) polyethylene container not over 30 gallons capacity. Polyethylene container must have a vented closure capable of preventing leakage of liquid contents.

(b) Peracetic acid solutions not exceeding 40 percent strength packed in strong wooden or fiberboard boxes, with not more than one inside glass container not exceeding 1 pint or 1 pound capacity, cushioned with sterile absorbent cotton or other cushioning material which will not react with the contents to generate heat, and with such cushioning material in sufficient quantity to completely absorb the contents of the bottle are exempt from specification packaging, marking other than name of contents, and labeling requirements. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817 and Part 197 of this chapter.

### § 73.224 Cumene hydroperoxide, dicumyl peroxide, diisopropylbenzene hydroperoxide, paramenthane hydroperoxide, and tertiary butylisopropyl benzene hydroperoxide.

(a) Cumene hydroperoxide of strength not exceeding 96 percent in a non-volatile solvent, dicumyl peroxide of strength not exceeding 50 percent in a nonvolatile solvent, diisopropylbenzene hydroperoxide of strength not exceeding 60 percent in a non-volatile solvent, paramenthane hydroperoxide of strength not exceeding 60 percent in a non-volatile solvent, and tertiary butylisopropyl benzene hydroperoxide of strength not exceeding 60 percent must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers which must be glass or earthenware, not over 1 gallon each, cushioned with incombustible packing material in sufficient quantity to absorb the contents of the inner container.

(2) Spec. 17E (§ 78.116 of this chapter). Metal drums (single-trip), with interiors so treated that they will be resistant to the contents.

(3) Spec. 103,[1] 103–W, 103A,[1] 103A–W, 111A60–F–1, 111A60–W–1, 111A100–F–2 or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars. Authorized for 90 percent or less cumene hydroperoxide in a nonvolatile solvent, paramenthane hydroperoxide of strength not exceeding 60 percent in a nonvolatile solvent and diisopropylbenzene hydroperoxide of strength not exceeding 60 percent in a nonvolatile solvent only. Specs. 103,[1] 103–W, 111A60–F–1 and 111A60–W–1 tank cars must have bottom outlets effectively sealed from the inside.

(4) Spec. MC310 and MC311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles. Authorized for paramenthane hydroperoxide of strength not exceeding 60 percent in a non-volatile solvent only.

### § 73.225 Phosphorus sesquisulfide.

(a) Phosphorus sesquisulfide must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes with metal inside containers hermetically sealed (soldered) or water-tight metal cans with screw-top closures. Other closures if approved by the Bureau of Explosives will be permitted.

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums, not over 30 gallons capacity each.

(3) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter). Metal drums (single-trip). Gross weight not over 425 pounds.

### § 73.226 Thorium metal, powdered.

(a) Thorium metal, powdered, must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes with inside metal containers, tightly and securely closed by push-in covers held in place by soldering at least at four points, or in screw-cap type metal cans. Inside containers must not exceed 10 pounds net each. Gross weight of outside packages must not exceed 75 pounds each.

(b) Thorium metal powder packed in tightly and securely closed metal cans, cushioned with incombustible material in strong outside wooden or fiberboard boxes, and not exceeding 4 ounces net weight in one outside shipping container, is exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817 and Part 197 of this chapter.

[1] Use of existing tank cars authorized, but new construction not authorized.

### § 73.227 Urea peroxide.

(a) Urea peroxide must be packed in specification containers as follows:

(1) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers which must be rubber or plastic containers not exceeding 4 ounces each. Gross weight not over 65 pounds.

(2) Spec. 21C (§ 78.224 of this chapter). Fiber drums completely coated on the inside with a suitable wax, synthetic coating, or metal foil suitable to the lading; or fiber drums having a metal foil (laminated between two sheets of kraft paper with thermoplastic adhesive) moisture and water barrier wound into the sidewall of the drum and located not more than 2 plies from the interior of drum but not to be wound as the first ply; a metal foil moisture and water barrier must also be present in the fiber or wood heading; exterior of drum sidewall must be protected with a water resistant coating; in addition to the tests prescribed by § 78.224–2 (a), (b), and (c) of this chapter, a drum having been given a 4-foot diagonal bottom chime drop must, after being emptied, withstand complete immersion of the bottom in 6 inches of water for 4 hours without leakage to the interior. Authorized net weight not over 225 pounds.

(3) Spec. 22A (§ 78.196 of this chapter). Plywood drums with paper bags, spec. 2J (§ 78.28 of this chapter) coated with suitable wax on the inner surface.

### § 73.228 Zinc ammonium nitrite.

(a) Zinc ammonium nitrite must be packed in specification containers as follows:

(1) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 17E, 17H, 37A, or 37B (§§ 78.116, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip). Gross weight not over 300 pounds.

### § 73.229 Chlorate and borate mixtures or chlorate and magnesium chloride mixtures.

(a) Chlorate and borate mixtures or chlorate and magnesium chloride mixtures containing more than 50 percent chlorate and no other hazardous additives must be packed as follows:

(1) As prescribed in § 73.163.

(b) Chlorate and borate mixtures or chlorate and magnesium chloride mixtures containing no other hazardous additives and containing less than 50 percent chlorate are exempt from specification packaging, marking, and labeling requirements when offered for transportation by rail freight or highway and packed as follows; shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter:

(1) Tight metal or fiber drums.

(2) Wooden boxes with tight inside metal containers.

(3) Multi-wall paper bags, net weight not over 50 pounds, moisture proof and sift proof, and having a strength capable of withstanding four 4-foot drops onto solid concrete.

(4) Strong fiberboard boxes with inside fiber containers having metal tops and bottoms, net weight not over 4 pounds each; gross weight of completed package not over 65 pounds.

(5) Strong fiberboard boxes with not more than 4 inside paper bags spec. 2D (§ 78.23 of this chapter), having net weight not over 10 pounds each.

(c) Chlorate and borate mixtures or chlorate and magnesium chloride mixtures containing 28 percent or less chlorate and no other hazardous additives, are not subject to the regulations in Parts 71–78 and 197 of this chapter.

**§ 73.230 Sodium, metallic, dispersion in organic solvent.**

(a) Sodium, metallic, dispersion in organic solvent must be packed in specification containers as follows:

(1) Spec. 15A (§ 78.168 of this chapter). Wooden boxes with inside containers which must be metal cans not exceeding one quart capacity, and each such can must be packed in another metal can and cushioned on all sides with at least one inch of incombustible dry nonhygroscopic material which is nonreactive with sodium at temperatures encountered during normal transportation. Both the inner and outer metal cans shall be equipped with an airtight closing device secured by positive means (not friction). Gross weight of completed package must not exceed 100 pounds.

(2) Spec. 17H (§ 78.118 of this chapter). Metal drum (single-trip) of not over 55 gallons capacity, with material contained in an inside spec. 17E (§ 78.116 of this chapter) metal drum (single-trip) of not over 30 gallons capacity. The inside drum shall be snugly packed in the outside drum by completely and evenly surrounding it with incombustible dry nonhygroscopic material which is nonreactive with sodium at temperatures encountered during normal transportation.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes constructed of at least 375-pound test (Mullen or Cady) solid fiberboard with inside metal cans not exceeding one quart capacity. Each such can must be packed in another metal can and cushioned on all sides with at least one inch of incombustible dry nonhygroscopic material which is nonreactive with sodium at temperatures encountered in normal transportation. Both the inner and outer metal cans shall be equipped with an airtight closing device secured by positive means (not friction) and must be individually nested into a double-faced corrugated partition of at least 200-pound test (Mullen or Cady) which is in turn surrounded on all sides by a peripheral double-walled corrugated liner of at least 200-pound test (Mullen or Cady). Authorized gross weight not over 90 pounds.

**§ 73.231 Calcium, metallic, crystalline.**

(a) Calcium, metallic, crystalline must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes with airtight inside metal containers not over 1 gallon capacity each.

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums, gross weight not over 350 pounds.

(3) Spec. 17C or 17H (§ 78.115 or § 78.118 of this chapter). Metal drums (single-trip), gross weight not over 350 pounds.

**§ 73.232 Tank cars containing residual phosphorus.**

(a) Tank cars from which phosphorus has been unloaded and from which all residual phosphorus has not been removed by thorough cleaning must be shipped filled with water or an inert gas and must be placarded by the shipper with placards prescribed in § 74.555 of this chapter.

**§ 73.233 Nickel catalyst, finely divided, activated or spent.**

(a) Nickel catalyst, finely divided, activated or spent must be wet with not less than 40 percent by weight of water or other equally suitable liquid and must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes with airtight metal inside containers which must have closing device fastened by positive means (not friction); or airtight glass inside containers of not over 1 quart capacity each, securely cushioned in asbestos wool, vermiculite, or equally efficient incombustible cushioning material.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with airtight metal inside containers which must have closing device fastened by positive means (not friction); or airtight glass inside containers of not over 1 quart capacity each, securely cushioned in asbestos wool, vermiculite, or equally efficient incombustible cushioning material.

(3) Spec. 5, 6A, 6B, or 6C (§§ 78.80, 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums not over 55 gallons capacity each.

(4) Spec. 17H, 37A, or 37B (§ 78.118, § 78.131, or § 78.132 of this chapter). Metal drums (single-trip).

**§ 73.234 Sodium nitrite and sodium nitrite mixtures.**

(a) Sodium nitrite and sodium nitrite mixtures must be packed in specification containers as follows:

(1) In containers as prescribed in § 73.154.

(2) Spec. 44C (§ 78.237 of this chapter). Multiwall paper bags constructed of at least 5 thicknesses of heavy duty shipping sack Kraft paper, or equivalent, with a minimum total basis weight of 310 pounds including a polyethylene or other suitable pliable plastic material inner sheet having a minimum basis weight of 10 pounds. All closures must be of such design as to provide a moisture-resistant package when closed for shipment. Net weight not over 100 pounds each. Authorized for carload or truckload shipments only.

(3) Spec. 21C (§ 78.224 of this chapter). Fiber drums: Authorized net weight not over 400 pounds.

(4) Spec. 37A (§ 78.131 of this chapter). Metal drums constructed of steel having minimum thickness of 24 gauge. Bolted or lever-lock closure rings authorized provided drums withstand test prescribed by § 78.131–11 of this chapter. Authorized gross weight not over 425 pounds.

(5) Sodium nitrite is authorized for shipment in tight sift-proof covered hopper cars. Cars must be thoroughly cleaned before loading.

(6) Tank cars which must be thoroughly cleaned before loading.

**§ 73.235 Ammonium bichromate (ammonium dichromate).**

(a) Ammonium bichromate (ammonium dichromate) must be packed in specification containers as follows:

(1) In containers as prescribed in § 73.154.

(2) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized net weight not over 400 pounds.

**§ 73.236 Decaborane.**

(a) Decaborane must be packed in specification containers as follows:

(1) Spec. 6A, 6B or 6C (§§ 78.97, 78.98 or § 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 17C, 17E, 17H, 37A, or 37B (§§ 78.115, 78.116, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip).

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers which must be metal cans; sliding-lid wooden boxes; fiber cans or boxes, spec. 2G (§ 78.26 of this chapter), not over 5 pounds capacity each; or glass bottles not over 1 pound capacity each. Packages containing glass containers must not weigh over 65 pounds gross.

**§ 73.237 Chlorine dioxide hydrate, frozen.**

(a) Chlorine dioxide hydrate, frozen, must be packed in specification containers as follows:

(1) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, with inside packages of polyethylene or other suitable material. Fiberboard boxes must be reinforced and insulated and sufficient dry ice must be used to maintain the hydrate in a frozen state during transportation. Shipments are authorized for transportation by private or contract carrier by motor vehicle only.

(2) Containers and means of refrigeration providing equal efficiency, when approved by the Bureau of Explosives, are authorized for shipments by private carrier by motor vehicle.

**§ 73.238 Aircraft rocket engines (commercial) and/or aircraft rocket engine igniters (commercial).**

(a) Aircraft rocket engines (commercial) and/or their igniters may be offered for transportation by rail freight, rail express, highway or water, when of a type approved by the Bureau of Explosives and when packaged and packed as follows:

(1) Spec. 15A, 15B, 15E or 16A (§ 78.168, 78.169, 78.172 or 78.185 of this chapter). Wooden boxes. Igniters must be packaged in sealed metal containers approved by the Bureau of Explosives and packed in wooden boxes as

specified above when shipped separately from the Aircraft rocket engines.

(2) Aircraft rocket engines (commercial), when approved by the Bureau of Explosives, may be packed in the same outside shipping container with their separately packaged igniters. Igniters must be packed in separate sealed metal containers in strong inside containers.

(3) Aircraft rocket engines (commercial) and/or their igniters, packed in any other manner than specified in subparagraphs (1) and (2) of this paragraph, must be in containers of a type approved by the Bureau of Explosives.

NOTE 1: For purposes of § 73.238, aircraft rocket engines (commercial) are standby aircraft propulsion engines which are for civil aircraft installation only, comprising a metal case containing a solid composite fuel other than one classified as an explosive and containing no explosive material or element.

### § 73.239 Barium azide—50 percent or more water wet.

(a) Barium azide—50 percent or more water wet, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside glass bottles not over one pound capacity each. Bottles shall have rubber stoppers wire tied for securement. If shipment is to take place at a time freezing weather is to be anticipated, a suitable antifreeze solution must be used to prevent freezing.

## Subpart E—Acids and Other Corrosive Liquids; Definition and Preparation

### § 73.240 Acids and other corrosive liquids; definition.

(a) Corrosive liquids for the purpose of Parts 71–78 of this chapter are those acids, alkaline caustic liquids and other corrosive liquids which, when in contact with living tissue, will cause severe damage of such tissue, by chemical action; or in case of leakage, will materially damage or destroy other freight by chemical action; or are liable to cause fire when in contact with organic matter or with certain chemicals.

EDITORIAL NOTE: Order 41, 24 F.R. 10111, Dec. 15, 1959, effective Feb. 28, 1960, amended § 73.240(a). Subsequently, Order 41A, 26 F.R. 217, Jan. 12, 1961, provided for the postponement of the effective date of the provisions of Order 41, pending further order of the Commission and provided that, in the meantime, the former provisions of § 73.240 (a) as set forth above remained in effect.

### § 73.241 Outage.

(a) Outage for containers of acids or other corrosive liquids for transportation by carriers by rail freight, rail express, highway, or water, must be as follows:

(1) The proper vacant space (outage) in a tank car or other shipping container depends on the coefficient of expansion of the liquid and the maximum increase of temperature to which it will be subjected in transit. Outage must be calculated to the total capacity of the container.

(2) *Outage requirements for containers other than tank cars, cargo tanks and portable tanks.* Containers must not be entirely filled. Sufficient interior space must be left vacant to prevent leakage or distortion of containers due to the expansion of the contents from increase of temperature during transit.

(3) *Outage requirements for tank cars.* In tank cars, outage must be calculated to percentage of the total capacity of the tank, i. e., shell and dome capacity combined. If the dome of the tank car does not provide sufficient outage, then vacant space must be left in the shell to make up the required outage. The outage for tank cars must be not less than 1 percent.

(4) *Outage requirements for cargo tanks or portable tanks.* No cargo tank or portable tank or compartment thereof used for the transportation of any acid or other corrosive liquid shall be completely filled. The outage for cargo tanks and portable tanks must be not less than 2 percent.

### § 73.242 Bottles containing acid or other corrosive liquids.

(a) Bottles containing acid or other corrosive liquids, as defined by § 73.240, must not be packed in the same outside container with any other article, except as specifically provided in paragraphs (b) and (c) of this section and § 73.25, § 73.257, § 73.258, § 73.259, § 73.260, § 73.261, or § 73.286.

(b) When bottles containing acid or other corrosive liquids are cushioned by incombustible absorbent material and securely packed in tightly closed metal containers, except hydrofluoric acid which must be packed in a container other than a metal container, they may be packed with other articles. This exception does not apply to nitric acid exceeding 40 percent concentration, perchloric acid, hydrogen peroxide exceeding 52 percent strength by weight, nitrohydrochloric acid, or nitrohydrochloric acid diluted, which must not be packed in the same outside container with any other article under any circumstances.

(c) Acid or corrosive liquid solutions in securely closed bottles, in quantity necessary for preparing photographic processing mixture and efficiently cushioned, may be packed in the same outside shipping container with required amount of packaged dry chemicals not classed as dangerous articles by these regulations, provided no dangerous reaction occurs should the contents of bottles and dry chemicals be mixed. Marking prescribed in § 73.401 (c) shall not be required.

### § 73.243 Closing and cushioning.

(a) All containers must be tightly and securely closed. Inside containers must be cushioned as prescribed or in any case when necessary to prevent breakage or leakage.

### § 73.244 Exemptions for acids and other corrosive liquids.

(a) Acids and other corrosive liquids, except those for which no exemptions are provided as indicated by the "No exemption" statement in § 72.5 of this chapter, in inside bottles having a capacity not over 1 pound or 16 ounces by volume each inclosed in a metal can in the outside container are, unless otherwise provided, exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(b) Other exemptions from specification packaging, marking, and labeling requirements for rail freight, rail express and highway transportation and exemptions from specification packaging, marking other than name of contents, and labeling requirements for transportation by carrier by water, are shown with the packing requirements for the article.

### § 73.245 Acids or other corrosive liquids not specifically provided for.

(a) Acids or other corrosive liquids, as defined in § 73.240, other than those for which special requirements are prescribed, must be packed in specification containers of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein, as follows:

(1) Spec. 1A, 1B, 1C, or 1E (§§ 78.1, 78.2, 78.3, or 78.7 of this chapter). Glass carboys in boxes, kegs, or plywood drums.

(2) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Spec. 1D (§ 78.4 of this chapter). Boxed glass carboys of not over 6.5 gallons nominal capacity which must be closed, and when reused must be reconditioned and tested, as provided in the specification; means shall be provided so that accumulated pressure in bottles shall not exceed 10 pounds per square inch gauge at 130° F., or shall vent at a pressure not to exceed 10 pounds per square inch gauge.

(4) Spec. 5A, 5C, or 5M (§§ 78.81, 78.83, or 78.90 of this chapter). Metal barrels or drums.

(5) Spec. 10A (§ 78.155 of this chapter). Wooden barrels or kegs; these containers must be lined with asphalt, paraffin, or wax impervious to the lading.

(6) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs with inside containers which must be glass or earthenware, not over 2 gallons each.

(7) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers which must be glass, earthenware, polyethylene or other nonfragile plastic material (bags are not authorized), not over 1 gallon each, except that inside containers up to 3 gallons are authorized when only one is packed in each outside container.

(8) Spec. 28 (§ 78.8 of this chapter). Metal-jacketed lead carboys.

(9) Spec. 5D (§ 78.84 of this chapter). Rubber lined metal barrels or drums.

Any barrel or drum that shows evidence of damage must be tested before shipment for defects in lining in the manner prescribed in § 78.84–15 (a) of this chapter.

(10) Spec. 5H (§ 78.87 of this chapter). Lead-lined metal barrels or drums.

(11) Spec. 43A (§ 78.18 of this chapter). Rubber drums.

(12) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers of polyethylene, or other nonfragile plastic material resistant to the lading, and having threaded closures or other equally efficient type closure, not over 1 gallon capacity each, suitably cushioned to prevent movement within the box. Gross weight of complete package must not exceed 65 pounds.

(13) Spec. 15P or 22C (§ 78.182 or 78.198 of this chapter). Glued plywood or wooden box, or plywood drum as prescribed by § 78.198–2(a) of this chapter, with spec. 2T (§ 78.21 of this chapter) polyethylene container.

(14) Spec. 17C, 17E, or 17F (§§ 78.115, 78.116, or 78.117 of this chapter). Metal drums (single-trip) with openings not exceeding 2.3 inches in diameter.

(15) Spec. 17H (§ 78.118 of this chapter). Metal drums (single-trip). Authorized for viscous cleaning compounds, liquid, only.

(16) Spec. 6D or 37M (nonreusable container) (§ 78.102 or 78.134 of this chapter). Cylindrical steel overpacks with inside spec. 2S or 2SL (§ 78.35 or 78.35a of this chapter) polyethylene container.

(17) Spec. 17H, 37A, or 37B (§§ 78.118, 78.131, or 78.132 of this chapter), metal drums (single-trip), with welded side seams, not over 5 gallons capacity each. Drums must be lined throughout with a pliable plastic material impervious to the lading. Spec. 37A and 37B metal drums must be at least 24 gauge steel.

(18) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass, polyethylene, or other non-fragile plastic bottles not over 1-gallon capacity each. Not more than 4 inside glass bottles exceeding 5 pints capacity each shall be packed in the outside container. Shipper must have established that the completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(19) Spec. 37P (§ 78.133 of this chapter). Steel drums with polyethylene liner (nonreusable container). Authorized only for materials that will not react with polyethylene and result in container failure.

(20) Spec. 16D (§ 78.187 of this chapter). Wirebound wooden overwrap, with inside spec. 2T, 2TL, 2S, or 2SL (§§ 78.21, 78.27, 78.35, or 78.35a of this chapter) polyethylene container.

(21) Spec. 12P (§ 78.211 of this chapter). Fiberboard boxes with inside spec. 2U (§ 78.24 of this chapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures.

(22) Spec. 16A (§ 78.185 of this chapter). Wirebound wooden box (see § 78.185–22 of this chapter) with inside specification 2U (§ 78.24 of this chapter) polyethylene container. The polyethylene container shall be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads.

(23) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside polyethylene bottles, not over 5 gallons capacity each, as specified by § 78.205–34 of this chapter. Not more than one bottle shall be packed in one outside box.

(24) Spec. 21C (§ 78.224 of this chapter). Fiber drum with inside spec. 2S, 2SL, or 2U (§ 78.35, § 78.35a, or § 78.24 of this chapter) polyethylene container. (See § 78.224–1(a)(2) of this chapter.)

(25) Spec. 12A or 12B (§ 78.210 or 78.205 of this chapter). Fiberboard boxes with inside aluminum containers not over 5 pounds capacity each. Aluminum containers must be approved by the Bureau of Explosives.

**§ 73.246 Antimony pentafluoride.**

(a) Antimony pentafluoride must be commercially anhydrous and must be packed in specification containers as follows:

(1) Spec. 3A150, 3AA150, 3E1800, 3B240, 4B240, or 4BA240 (§§ 78.36, 78.37, 78.42, 78.38, 78.50, or 78.51 of this chapter). Cylinders closed by means of iron or steel threaded plugs.

**§ 73.247 Acetyl chloride, antimony pentachloride, benzoyl chloride, chromyl chloride, pyro sulfuryl chloride, silicon chloride, sulfur chloride (mono and di), sulfuryl chloride, thionyl chloride, tin tetrachloride (anhydrous), and titanium tetrachloride.**

(a) Acetyl chloride, antimony pentachloride, benzoyl chloride, chromyl chloride, pyro sulfuryl chloride, silicon chloride, sulfur chloride (mono and di), sulfuryl chloride, thionyl chloride, tin tetrachloride (anhydrous), and titanium tetrachloride, must, except as indicated, be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass or earthenware inside containers not over 1 gallon each, except that inside containers up to 3 gallons each are authorized when only one is packed in an outside container.

(2) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs, with glass or earthenware inside containers not over 2 gallons each.

(3) Spec. 1A, 1C, 1D, or 1E (§§ 78.1, 78.3, 78.4, or 78.7 of this chapter). Glass carboys in boxes, kegs, or plywood drums (not permitted for antimony pentachloride or tin tetrachloride, anhydrous).

(4) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only (not permitted for antimony pentachloride or tin tetrachloride anhydrous).

(5) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with aluminum bottles of 99 percent pure aluminum not over 1 gallon capacity each, having aluminum screw caps with gasket resistant to contents. Authorized for chromyl chloride only.

(6) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes having inside containers of securely closed soft-lead tubes having not more than 65 fluid ounces capacity each, which tubes shall be individually packed in securely closed steel tubes, with not more than 3 such steel tubes fastened together as a unit. The inside units shall be surrounded on all sides with incombustible mineral material. Authorized for titanium tetrachloride only.

(7) Spec. 5A, 5B, or 17C (single-trip) (§ 78.81, 78.82, or 78.115 of this chapter). Metal barrels or drums with openings not exceeding 2.3 inches in diameter.

(8) Spec. 5K (§ 78.88 of this chapter). Nickel drums, authorized for acetyl chloride, benzoyl chloride, pyro sulfuryl chloride, sulfuryl chloride, and thionyl chloride only. When shipped in unstabilized condition, the lading must be anhydrous and must be free from impurities such as iron.

(9) Spec. 5C (§ 78.83 of this chapter). Barrels or drums of type 304 stainless steel not over 30 gallons capacity each. Authorized for chromyl chloride only.

(10) Spec. 42D (§ 78.109 of this chapter). Aluminum drums not over 30 gallons capacity each. Authorized for chromyl chloride only.

(11) Spec. 60 (§ 78.255 of this chapter). Portable tanks.

(12) Spec. MC 310 or MC 311 (§§ 78.330 or 78.331 of this chapter). Tank motor vehicles.

(13) Spec. 103A,[1] 103A–W, 105A300–W, 111A–100–F–2, or 111A100–W–2 (§§ 79.100, 79.101, 79.200, 79.201 of this chapter) tank cars, except that for tin tetrachloride (anhydrous) spec. 105A300–W tank cars must be used.

(14) Spec. 103A,[1] 105A–W, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars. Authorized for titanium tetrachloride, anhydrous only. Tank cars shall have safety valves of approved design and not subject to rapid deterioration by the lading.

(15) Sulfur chloride packed in glass or earthenware bottles or carboys must be cushioned in the outside container by means of incombustible elastic packing material of such nature that a mixture of the liquid and the packing material will not cause fires or heating.

(16) Spec. 106A500,[1] 106A500–X, or 110A500–W (§§ 79.300, 79.301 of this chapter). Tank cars. Authorized for antimony pentachloride and titanium tetrachloride (anhydrous) only. Titanium tetrachloride (anhydrous) tanks must not be equipped with safety devices.

[1] Use of existing tank cars authorized, but new construction not authorized.

**§ 73.248 Acid sludge, sludge acid, spent sulfuric acid, or spent mixed acid.**

(a) Acid sludge, sludge acid, spent sulfuric acid, or spent mixed acid, resulting from the use of sulfuric acid in various processes, except when containing hydrofluoric acid, which will not corrode interior of tanks cars at sufficiently rapid rate to cause leakage during transportation, must be packed in specification containers as follows:

(1) Spec. 1A, 1D, or 1E (§§ 78.1, 78.4, or 78.7 of this chapter). Carboys in boxes or plywood drums. (For spent sulfuric acid only).

(2) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185 or 78.190 of this chapter). Wooden boxes with inside containers which must be glass or earthenware, not over 1 gallon each, except that inside containers up to 3 gallons are authorized when only one is packed in each outside container.

(4) Spec. 103A,[1] 103A–W, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars, provided the product is sufficiently liquid to be unloaded through the dome or manway.

(5) Spec. 103,[1] 103–W, 111A60–F–1, or 111A60–W–1 (§§ 79.200, 79.201 of this chapter). Tank cars, provided the product is too viscous to be unloaded through the dome or manway.

(6) Spec. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles.

(7) Spec. 60 (§ 78.255 of this chapter). Portable tanks.

**§ 73.249 Alkaline corrosive liquids, n.o.s., alkaline caustic liquids, n.o.s., alkaline corrosive battery fluids, and sodium aluminate, liquid.**

(a) Alkaline corrosive liquids, n.o.s., alkaline caustic liquids, n.o.s., alkaline corrosive battery fluids, and sodium aluminate, liquid, when offered for transportation by carriers by rail freight, highway, or water must be packed in specification containers of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein as follows:

(1) In containers prescribed in § 73.245.

(2) Spec. 15A, 15B. 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass or earthenware inside containers, not over 2 gallons each, or with metal inside containers, not over 5 gallons each.

(3) Spec. 5 or 5A (§§ 78.80 or 78.81 of this chapter). Metal barrels or drums, with openings not exceeding 2.3 inches in diameter.

(4) Spec. 17H (§ 78.118 of this chapter). Metal drums (single-trip). Authorized only for liquid boiler compounds or liquid water treatment compounds.

(5) Spec. 103[1], 103–W, 103A[1], 103A–W, 103B[1], 103B–W, 104[1], 104–W, 105A100[1], 105A100–W, 111A60–F–1, 111A60–W–1, 111A100–F–2, 111A100–W–2, 111A100–W–3, 111A100–W–4, or 111A100–W–5 (§§ 79.100, 79.101, 79.200, 79.201 of this chapter). Tank cars.

(6) Spec. MC 310 or MC 311 (§ 78.330 or § 78.331 of this chapter), tank motor vehicles.

(7) Spec. 60 (§ 78.255 of this chapter), portable tanks.

(8) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with glass inside containers of not over 16 ounces capacity each.

(9) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers of polyethylene having capacity not over 1 gallon each.

(10) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, with not more than one glass inside container not over 1 gallon capacity containing sodium hydroxide solution not over 25 percent strength and packed in a strong fiberboard box. Dry chemicals for photographic development process not classed as dangerous articles, contained in suitable inside packages, may be packed in the same outside box. The marking requirements of § 73.401 (c) shall not apply.

(11) Spec. 29 (§ 78.226 of this chapter). Mailing tubes, with not more than one inside polyethylene bottle not over 1-quart capacity each.

(b) Alkaline corrosive liquids, n.o.s., alkaline caustic liquids, n.o.s., alkaline corrosive battery fluids, and sodium aluminate, liquid, when offered for transportation by rail express, must be packed in specification containers as follows (also authorized for transportation by carriers by rail freight, highway, or water):

(1) In containers as prescribed in paragraphs (a) (8), (9), (10), and (11) of this section and § 73.245 (a) (12).

(2) Spec. 5 or 5A (§§ 78.80 or 78.81 of this chapter). Metal barrels or drums, capacity not exceeding 10 gallons, with openings not exceeding 2.3 inches in diameter.

(3) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass or earthenware inside containers not over 1 gallon each, or with metal cans not over 5 gallons each.

(c) Inside containers of not more than 8-fluid ounces capacity each, resistant to lading, packed in strong outside containers, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

**§ 73.250 Automobiles or other self-propelled vehicles, engines or other mechanical apparatus.**

(a) Automobiles and other self-propelled vehicles equipped with electric storage batteries, wet, or with electric storage batteries, wet, removed from vehicles; and electric storage batteries, wet when included in carload or truckload shipments of automobile parts or assembled material in accordance with subparagraphs (a) (1), (2), and (3) are exempt from specification packaging, marking, and labeling requirements. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter. (See also § 73.257(b).)

(1) When batteries are removed from automobiles and loaded into car or motor vehicle therewith, the batteries must be so loaded, blocked, and braced in car as to prevent movement therein during transit, and the load must be so arranged that loose articles cannot come into contact with the batteries.

(2) When wet batteries or batteries shipped dry in the same container with electrolyte (acid) are shipped with automobile parts or assembly material, the batteries must be boxed or crated and so loaded, blocked, and braced in the car or motor vehicle as to prevent movement therein during transit, and the load must be so arranged that loose articles cannot come in contact with the batteries.

(3) When batteries are installed in the vehicle, they must be completely protected so that short circuits will be prevented and so secured that leakage of acid will not occur under conditions normal to transportation.

(b) Engines or mechanical apparatus of such size or weight as to require securement to skids to facilitate handling may have electric storage batteries, wet, necessary for the operation thereof, either securely fastened in the holder provided on the equipment and protected, including battery terminals, in such manner as to prevent damage thereto or short circuits, or completely boxed in containers of sound lumber and with filling holes upright, securely fastened to the skids upon which the engine or mechanical apparatus is mounted to prevent accidental tipping or looseness in transportation. Electric storage batteries, wet, as described herein are exempt from specification packaging.

**§ 73.251 Boron trichloride.**

(a) Boron trichloride must be packed in specification containers as follows:

(1) Cylinders as prescribed for any compressed gas, except acetylene.

(2) Spec. 105A300–W, 106A500,[1] or 106–A500–X (§§ 79.100, 79.101, 79.300, 79.301 of this chapter). Tank cars.

**§ 73.252 Bromine.**

(a) Bromine must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes with glass inside containers not over 1

[1] Use of existing tank cars authorized, but new construction not authorized.

quart each; or with stone or earthenware jugs not over 1 gallon each.

(2) Spec. 5H (§ 78.87 of this chapter). Lead-lined metal barrels or drums not over 10 gallons each.

(3) Spec. 105A300–W (§ 78.286 of this chapter). Tank cars. The tank must be nickel clad at least 20 percent or must be lined with lead at least 3/16" thick; openings in tank heads to facilitate application of lead lining are authorized and must be closed in an approved manner; all closures and appurtenances which are in contact with the lading must be lead lined or must be made of metal not subject to rapid deterioration by contact with the lading; all interior welds in nickel clad tanks must be protected by pure nickel butt straps to eliminate iron contamination. Except as otherwise provided herein the water weight capacity of the tank must not be more than 20,400 pounds, and the maximum quantity of liquid bromine loaded into the tank must not be more than 60,000 pounds or 300 percent of the water weight capacity of the tank, whichever quantity is the lesser. In no case shall the quantity loaded be less than 98 percent of the quantity the tank is authorized to carry. When tanks are equipped with manway cover plates, safety valves, venting, loading and unloading valves in accordance with spec. ICC–105A300–W and tank jackets are stenciled ICC–105A300–W, but in all other respects are constructed and maintained in full compliance with spec. ICC–105A500–W (§ 78.288 of this chapter), the water weight capacity of the tank must not be more than 37,400 pounds, and the maximum quantity of liquid bromine loaded into the tank must not be more than 110,000 pounds or 300 percent of the water weight capacity of the tank, whichever quantity is the lesser.

(4) Spec. MC 310 (§ 78.330 of this chapter). Tank motor vehicles. The tank must have a steel shell thickness of 3/8" minimum and must be lined with lead of at least 3/8" thickness. The water weight capacity of the tank must not be more than 5100 pounds and the maximum quantity of liquid bromine loaded into the tank must not be more than 15,000 pounds or 300 percent of the water weight capacity of the tank, whichever quantity is the lesser. In no case shall the quantity loaded be less than 98 percent of the quantity the tank is authorized to carry.

(b) Outage (vacant space above liquid) for inside containers must be not less than 15 percent of capacity of container.

(c) For other authorized containers an outage of not less than 10 percent is required.

(d) Inside containers must be closed by glass, earthenware, or stone stoppers ground to fit and securely fastened; or bottles may have necks with molded screw threads which must be closed by threaded-type caps with lead or other efficient bromine-resistant gaskets and cushioned by elastic material to insure tight closure. Sealed glass ampoules are also authorized.

(e) Bottles or jugs must be securely cushioned on all sides with incombustible packing material, such as whiting, mineral wood, infusorial earth (kieselguhr), sifted ashes, powdered china clay, or similar material, at least 1 inch thick, which will not produce heat when mixed with bromine. The use of hay, sawdust, excelsior, or other organic material, either treated or untreated, as a cushioning or packing material, is prohibited.

(f) Not more than 15 quarts of bromine in bottles, nor more than 12 quarts in jugs, may be packed in one box.

(g) Bromine which has been dried in accordance with good commercial practice may also be packed in specification containers as follows:

(1) Spec. 5K or 5M (§§ 78.88 or 78.90 of this chapter). Nickel or monel drums of not over 10 gallons capacity each and containing not more than 225 pounds net weight of bromine. Drums must be of metal at least 14 gauge United States standard throughout and must have chime reinforcement adequate for their protection. All openings must be in one head and closing parts (plug, cap, flange, etc.) must be of the same metal as the drum. One opening not over 2.3 inch diameter and one opening not over 3/4 inch standard pipe size are permitted. Each drum must be completely emptied and dried before reuse and must be equipped with gaskets of a material approved by the Bureau of Explosives.

### § 73.253 Chloracetyl chloride.

(a) Chloracetyl chloride must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes, with inside glass containers not over 5 pints capacity each, cushioned with incombustible material.

(2) Spec. 28 (§ 78.8 of this chapter). Metal-jacketed lead carboys.

(3) Spec. 5H (§ 78.87 of this chapter). Lead-lined metal barrels or drums.

(4) Spec. 1A, 1C, or 1D (§§ 78.1, 78.3, or 78.4 of this chapter). Carboys in boxes or kegs. Use of these containers will be permitted because of the present emergency and until further order of the Commission.

(5) Spec. 5K (§ 78.88 of this chapter). Nickel drums.

(6) Specs. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles having tanks fabricated from Type 316 stainless steel.

(7) Spec. 103A–W, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars. Tanks must have a nickel cladding of 1/16 inch minimum thickness. Nickel cladding in tanks must have a minimum nickel content of at least 99 percent pure nickel.

(8) Spec. 103A–N–W (§ 78.299 of this chapter). Tank cars. Tank must be of solid nickel at least 99 percent pure and all cast metal parts of the tank in contact with the lading must have a minimum nickel content of approximately 96.7 percent.

### § 73.254 Chlorosulfonic acid and mixtures of chlorosulfonic acid-sulfur trioxide.

(a) Chlorosulfonic acid and mixtures of chlorosulfonic acid-sulfur trioxide must be packed in specification containers as follows:

(1) Spec. 5A or 5C (§§ 78.81 or 78.83 of this chapter). Metal barrels or drums.

(2) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes, with inside containers which must be glass or earthenware, not over 1 gallon each, except that inside containers up to 3 gallons are authorized when only one is packed in each outside container.

(3) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels, with inside glass or earthenware containers not over 2 gallons each.

(4) Spec. 103A,[1] 103A–W, 103C–W, 103E–W, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars.

(5) Specs. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles.

### § 73.255 Dimethyl sulfate.

(a) Dimethyl sulfate must be packed in specification containers as follows:

(1) Spec. 5A or 5C (§§ 78.81 or 78.83 of this chapter). Metal barrels or drums not over 55 gallons each. Spec. 5C metal barrels or drums must be constructed of Type 304 stainless steel.

(2) Spec. 5 (§ 78.80 of this chapter). Metal barrels or drums not over 15 gallons each, with openings not exceeding 2.3 inches in diameter, inclosed in strong crates made of lumber at least 5/8 inch thick.

(3) Spec. 15A, 15B, 15C, 16A, or 19A (§ 78.168, § 78.169, § 78.170, § 78.185, or § 78.190 of this chapter). Wooden boxes with each box containing a single glass inside container not over 1 quart capacity, closed by ground glass stopper or other equally efficient closure securely fastened in place, and cushioned with incombustible absorbent material in hermetically sealed (soldered) metal can, the can then being cushioned with incombustible cushioning material in the outside container.

(4) Spec. 103A,[1] 103A–W, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars.

(5) Spec. MC 310 or MC 311 (§ 78.330 or 78.331 of this chapter). Tank motor vehicles.

(6) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with each box containing not more than six inside glass containers not over 1-quart capacity each, closed by plastic screw-cap resistant to the lading, and each completely surrounded by incombustible absorbent cushioning material and enclosed in a metal can having rolled, seamed-on heads of a key-opening type; or in not more than six inside glass containers not over 1-quart capacity each, closed by ground glass stopper, by plastic screw-cap resistant to the lading, or by other equally efficient closure securely fastened in place, and cushioned with incombustible absorbent material in hermetically sealed (soldered) metal can, the can then being cushioned with incombustible cushioning material in the outside container.

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[1] Use of existing tank cars authorized, but new construction not authorized.

**§ 73.256 Compounds, cleaning, liquid.**

(a) Compounds, cleaning, liquid, containing not more than 60 percent hydrofluoric acid, must be packed in specification containers as follows:

(1) As prescribed in § 73.264 (a) (1) and (2).

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers of natural rubber, ceresine, lead, or other material of equal strength and not subject to destruction by the lading.

(3) Spec. 22B (§ 78.197 of this chapter). Plywood drums equipped with molded liner of type and material approved by the Bureau of Explosives.

(4) Spec. 16A (§ 78.185 of this chapter). Wirebound wooden box (see § 78.185–22 of this chapter) with inside specification 2U (§ 78.24 of this chapter) polyethylene container. The polyethylene container shall be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads.

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drum with inside spec. 2U (§ 78.24 of this chapter) polyethylene container. (See § 78.224–1(a) (2) of this chapter.)

**§ 73.257 Electrolyte (acid) or corrosive battery fluid.**

(a) Electrolyte (acid) must not be over 47 percent strength (39° Baumé). Electrolyte or corrosive battery fluid must be packed in specification containers as follows:

(1) As prescribed in § 73.272 except that unlined tank cars and metal barrels or drums must not be used.

(2) Spec. 43A (§ 78.18 of this chapter). Rubber drums.

(3) When the material is alkaline it may also be shipped when packed in containers as prescribed in § 73.249.

(4) Spec. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles, except that unlined tanks must not be used.

(5) Spec. 60 (§ 78.255 of this chapter). Portable tanks, except that unlined tanks must not be used.

(6) Spec. 12B or 12C (§ 78.205 or § 78.206 of this chapter). Fiberboard boxes with inside containers of polyethylene or other electrolyte acid resistant nonfragile materials having secure closures capable of withstanding conditions incident to transportation without leakage and unless containers are rigid or semi-rigid in nature they must be contained in other strong inside containers; minimum thickness of polyethylene or other materials shall be not less than 0.003 inch for any film sheet for multi-wall containers or not less than 0.006 inch for single-wall containers; not more than 12 such inside containers shall be packed in one outside box and the marking prescribed in § 73.401(c) shall not be required. Inside containers shall be packed to prevent movement within the box (see §§ 78.205–34 and 78.206–19 of this chapter). Dry storage batteries or battery charger device may be packed in the same outside box when adequately separated from other inside containers (see § 78.205–33 of this chapter); gross weight of completed package shall not exceed 65 pounds, except when acid is packed in individual inside containers the gross weight shall be not over 75 pounds. Complete package, closed as for shipment, with inside containers filled with liquid of same specific gravity as commodity to be shipped, must be capable of withstanding at least 2 drops from a height of 4 feet onto solid concrete without leakage from or rupture of inside containers.

(7) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers of polyethylene, or other electrolyte acid resistant plastic, not over 1 gallon each.

(8) Spec. 1EX (§ 78.6 of this chapter). Carboys in plywood drums (single-trip).

(9) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes constructed of at least 275-pound test (Mullen or Cady) double-wall corrugated fiberboard or 325-pound test (Mullen or Cady) double-faced corrugated fiberboard, with not more than 12 inside glass bottles, having acid-proof closures, of not over 32 ounces capacity each. Inside glass bottles must be separated and cushioned by suitable corrugated fiberboard partitions. The box must be equipped with top and bottom pads. (See § 78.205–32 of this chapter.)

(10) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes having not more than 1 inside glass bottle, with acid-proof closure, not over 1 gallon capacity. Box shall be constructed of at least 350-pound test (Mullen or Cady) double-faced corrugated fiberboard of full depth telescope type. Cushioning and closure of box (pressure sensitive tape may be used) must be such that a representative box, with inside glass bottle filled with water, shall be capable of withstanding two drops from a height of 4 feet onto solid concrete without breakage of inner bottle or failure of the closure.

(11) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 1 gallon capacity each. Not more than 4 inside containers exceeding 5 pints capacity each shall be packed in the outside container. Shipper must have established that the completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(12) Spec. 37P (§ 78.133 of this chapter). Steel drums with polyethylene liner (nonreusable container).

(13) Spec. 6D or 37M (nonreusable container) (§ 78.102 or 78.134 of this chapter). Cylindrical steel overpacks with inside spec. 2S (§ 78.35 of this chapter) polyethylene container.

(14) Spec. 12B (§ 78.205 of this chapter). Corrugated fiberboard boxes with plastic bags as defined in § 78.205–37 of this chapter. Marking prescribed in § 73.401(c) shall not be required.

(b) Shipments of electrolyte (acid) or corrosive battery fluid with vehicles offered for transportation by, for, or to the Departments of the Army, Navy, or Air Force of the United States Government are exempt from Parts 71–78 and 197 of this chapter when packed as follows:

(1) In one inside glass bottle of not over 1 gallon capacity, tightly and securely closed, packed in a strong outside container and cushioned therein on all sides with incombustible absorbent material in sufficient quantity to completely absorb liquid contents in event of breakage. Outside container must be so blocked, braced or stayed within or on the vehicle that it cannot change position during transit.

(c) Electrolyte acid or corrosive battery fluid contained in polyethylene containers not over 2 quarts capacity each and packed not more than 3 containers in spec. 15A, 15B, 15C, 16A, or 19A (§ 78.168, § 78..69, § 78.170, § 78.185, or § 78.190 of this chapter) wooden boxes or packed as prescribed in § 73.257 (a) (6) and bearing white acid label or corrosive liquid label may be securely attached to self-propelled vehicles or mobile agricultural machinery or securely braced on car floors.

(d) Strong, tightly closed metal drums not over 15 gallons capacity each, having not to exceed 25 eight-ounce polyethylene, or other suitable plastic bottles, securely cushioned therein. Shipments authorized only by, for, or to the Departments of the Army, Navy, or Air Force of the United States Government. The drum containing the electrolyte acid or corrosive battery fluid may be securely attached to another steel drum containing a dry, charged storage battery or batteries.

**§ 73.258 Electrolyte, acid, or alkaline corrosive battery fluid, packed with storage batteries.**

(a) Electrolyte, acid, or alkaline corrosive battery fluid, packed with storage batteries, except as provided in § 73.257 (a)(6), must be packed in specification containers as follows:

(1) Spec. 15D or 16B (§§ 78.171 or 78.186 of this chapter). Wooden boxes with inside containers of glass bottles not over 1 gallon each nor over 2 gallons total in each outside container. Inside containers must be well cushioned and separated from batteries by a strong solid wooden partition.

(2) Electrolyte, acid, or alkaline corrosive battery fluid included with storage batteries and filling kits may be packed in strong plywood or wooden boxes when shipments are made by, for, or to the Departments of the Army, Navy, or Air Force of the United States Government in outside containers of their specifications provided the electrolyte, acid, or alkaline corrosive battery fluid is packed in polyethylene bottles not over 32-ounce capacity each and not more than 24 bottles securely separated from storage batteries and kits may be shipped in one outside package.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with not more than 12 inside containers of polyethylene or other material resistant to the lading, not over 64-ounce capacity each. Polyethylene containers that are not rigid or semi-rigid in nature must be contained in other strong inside containers; minimum thickness of polyethylene or other plastic material shall be not less than 0.003 inch for any film sheet for multi-wall containers or not less than 0.006 inch for single-wall containers. Inside containers must be adequately separated from the storage battery.

Authorized gross weight not over 65 pounds. (See § 78.205–33 of this chapter).

**§ 73.259 Electrolyte, acid, or alkaline corrosive battery fluid, packed with battery charger, radio current supply device, or electronic equipment and actuating devices.**

(a) Electrolyte, acid, or alkaline corrosive battery fluid packed with battery charger, radio current supply device or parts thereof, or electronic equipment and actuating devices, with only one device or outfit in each package, in the amount necessary for operation of the device or equipment, provided the containers of electrolyte, acid, or alkaline corrosive battery fluid, are adequately cushioned to prevent breakage, leakage, or damage to other articles packed therewith, must be packed in specification containers or as otherwise authorized herein, as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§ 78.168, § 78.169, § 78.170, § 78.185, or § 78.190 of this chapter). Wooden boxes, provided the liquid is in bottles securely closed and cushioned as prescribed in paragraph (a) of this section, and separated from charger supply device, and parts, or electronic equipment by a strong solid wooden partition.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, when the liquid is in a strong bottle not exceeding 16 fluid ounces, which must be securely closed and cushioned as prescribed in paragraph (a) of this section. Not more than 12 such packages may be packed under the provisions of § 73.25.

(3) Electrolyte, acid, or alkaline corrosive battery fluid, in separate inside acid or alkaline fluid resistant containers not over 5 gallons capacity each included with electronic equipment and actuating devices, are authorized in strong, tightly closed steel drums.

**§ 73.260 Electric storage batteries, wet.**

(a) Electric storage batteries, containing electrolyte acid or alkaline corrosive battery fluid, must be completely protected so that short circuits will be prevented; they must not be packed with other articles except as provided in §§ 73.250 and 73.258, portable searchlights properly cushioned, battery parts, or hydrometers, securely packed in a separate container. The batteries either with or without other articles must be packed in specification containers as follows:

(1) Spec. 15D or 16B (§§ 78.171 or 78.186 of this chapter). Wooden or wirebound wooden boxes except as provided in paragraphs (b) and (c) of this section.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard box as authorized by §§ 78.205–25(a), 78.205–28(a), and 78.205–35(a) of this chapter.

(3) Electric storage batteries with case of asphaltum composition, impregnated rubber, steel case type, synthetic resin (plastic), or wooden battery box type, protected against short circuits and firmly secured to skids or pallets capable of withstanding the shocks normally incident to transportation, are exempt from specification packaging requirements for transportation by rail freight, highway, or water. The height of the completed unit must not exceed 1½ times the width of the skid or pallet. The unit must weigh not less than 300 pounds gross and must not fail under a superimposed weight equal to two times the weight of the unit or a superimposed weight of 4,000 pounds if the weight of the unit exceeds 2,000 pounds. Battery terminals must not be relied upon to support any part of the superimposed weight.

(4) Electric storage batteries weighing 500 pounds or more, with case of asphaltum composition, impregnated rubber, steel case type, synthetic resin (plastic), or wooden battery box type, consisting of carriers' equipment may be shipped by rail freight when mounted on suitable skids and protected against short circuits. Such shipments must not be offered in interchange.

(b) Electric storage batteries with case of asphaltum composition, impregnated rubber, steel case type, synthetic resin (plastic), or wooden battery box type: packing authorized as follows:

(1) One to three batteries not over 25 pounds each in outside box, gross weight not over 75 pounds; specification container not required.

(2) Not more than four batteries not over 15 pounds each may be packed in strong outside fiberboard or wooden boxes, when securely cushioned and packed to prevent short circuits; specification container not required. Authorized gross weight 65 pounds.

(3) Not more than five batteries not over 10 pounds each may be packed in strong outside fiberboard or wooden boxes, when securely cushioned and packed to prevent short circuits; specification container not required. Authorized gross weight 65 pounds.

(c) Single batteries not exceeding 75 pounds each, in addition to requirements of paragraphs (a) and (b) of this section, may be shipped in 5-sided slip covers or in completely closed fiberboard boxes, of solid or double-faced corrugated fiberboard complying with the following: (See par. (a) (1) of this section for more than one battery in an outside container.)

(1) Slip cover or fiberboard box must fit snugly and provide inside top clearance of at least ½ inch above battery terminals and filler caps with reinforcement in place. Assembled for shipment, the bottom edges of the slip cover may extend to the base of the battery but must not expose more than 1 inch thereof.

(2) Top of slip cover or fiberboard box design must comply with the following:

(i) Top of slip cover or fiberboard box must have interior reinforcement (insert or saddle) of fiberboard, wood, or other material of equal strength and rigidity so formed that any superimposed weight will bear only and directly downward on the top edges of the battery case or intercell connectors (straps), or plastic battery terminal covers designed to transmit any superimposed weight directly to the top inner wall of the battery case, or fiberboard boxes with chip board and chip board jute lined tubes which shall fit directly over the terminal posts and rest directly on battery cell covers.

(ii) Or be protected by a scored one piece cover-liner of 200-pound test (Mullen or Cady) double-faced corrugated fiberboard extending from the base of the battery on one side, across the top of the battery and to the base of the battery on the opposite side.

(iii) Or a five-sided slip cover having top of only one thickness of fiberboard, with lengthwise inner flaps roll folded to form a reinforcement of such height as to provide clearance required by subparagraph (1) of this paragraph which shall rest on the side edges of the battery. Outer end flaps to overlap approximately one inch and shall be butt folded and tucked into a center slot cut in the inner flaps. The requirements of subdivisions (i) and (iv) of this subparagraph do not apply.

(iv) When top of slip cover or fiberboard box consists of only one thickness of material, reinforcement must have a plane surface of same interior dimensions and thickness. Reinforcement must be of such height as to provide minimum clearance required above and must be constructed to remain securely in place or be fastened to slip cover or fiberboard box.

(3) All fiberboard must be at least 200 pound test (Mullen) and completed package (battery and slip cover or fiberboard box) must be capable of withstanding top-to-bottom compression test of at least 500 pounds without damage to battery terminals, battery cell covers, and filler caps.

(d) Electric storage batteries, containing electrolyte or corrosive battery fluid, of the nonspillable type, protected against short circuits and completely and securely boxed are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(e) Shipments of electric storage batteries containing electrolyte or battery fluid, loaded or braced to prevent damage in transit and short circuits, are exempt from Parts 71–78 and 197 of this chapter: *Provided, however,* That storage batteries (either wet or dry) constitute the only commodity being transported in the railroad car or motor vehicle body.

(f) Electric storage batteries containing electrolyte or corrosive battery fluid, other than those of the nonspillable type, when shipped in less-than-carload and less-than-truckload lots, must be marked and labeled as required by §§ 73.401 (a), (c), and 73.402 (a) (3).

(g) Electric storage batteries, containing electrolyte or corrosive battery fluid in a coil from which it is injected into the battery cells by a gas generator and initiator assembled with the battery, and which are nonspillable and leakproof, are exempt from Parts 71–78 and 197 of this chapter when approved by the Bureau of Explosives.

**§ 73.261 Fire-extinguisher charges.**

(a) Fire-extinguisher charges consisting of sulfuric acid in glass inside containers securely closed may be packed with bicarbonate of soda in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass inside containers not over 5 pints each, cushioned.

(2) Spec. 21C (§ 78.224 of this chapter). Fiber drums with a single inside container consisting of a glass bottle not over 64 fluid ounces capacity filled with not over six pounds by weight of sulfuric acid (approximately 50 fluid ounces by volume). Bottle must be suspended in center of outside container by means of adequate supports and surrounded by bicarbonate of soda in sufficient quantity to fill drum and neutralize contents in the event of breakage.

(b) Fire-extinguisher charges as described in subparagraphs (1) to (3) of this paragraph are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(1) Fire-extinguisher charges consisting of sulfuric acid in strong 8-fluid ounce or smaller bottles, securely closed and packed with bicarbonate of soda completely surrounding the bottles of acid in outside fiberboard or wooden boxes. Closure must consist of a metal cap lined with an acid-resistant washer or a composition stopper of material that will not be attacked by the acid.

(2) Fire-extinguisher charges, consisting of chlorosulfonic acid in a hermetically sealed bottle not exceeding 2 ounces capacity, securely packed in a metal container inclosed in another metal container, the inner metal container being cushioned in the outer metal container with asbestos fabric and the completed package embedded in potassium carbonate in outside fiberboard or wooden boxes.

(3) Fire-extinguisher charges, consisting of sulfuric acid in 10-ounce or smaller bottles, securely closed, packed in a tight fiber carton. Closure must consist of a metal cap lined with an acid-resistant washer or a composition stopper of material that will not be attacked by the acid. The bottle and carton packed in either potassium carbonate or potassium carbonate and alkali packed in a cylindrical tin can, with slip cover, secured by tape in outside fiberboard or wooden boxes.

**§ 73.262 Hydrobromic acid.**

(a) Hydrobromic acid not over 49 percent strength must be packed in specification containers as follows:

(1) Spec. 1A, 1C, 1D, or 1E (§§ 78.1, 78.3, 78.4, or 78.7 of this chapter). Carboy in box, keg, or plywood drum.

(2) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs with glass or earthenware inside containers, not over 2 gallons each.

(4) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers which must be glass or earthenware, not over 1 gallon each, except that inside containers up to 3 gallons are authorized when only one is packed in each outside container.

(5) Spec. 43A (§ 78.18 of this chapter). Rubber drums. Any such container showing evidence of damage must be tested to 20 pounds hydrostatic pressure, without leakage, before using.

(6) Spec. 103B,[1] 103B–W, or 111A100–W–5 (§§ 79.200, 79.201 of this chapter). Tank cars.

(7) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 5 pints capacity each. Not more than six 5-pint glass bottles may be packed in one outside container. Shipper must have established that the completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(8) Spec. 37P (§ 78.133 of this chapter). Steel drums, not over 5 gallons capacity, with polyethylene liner (nonreusable container). Drums exceeding 1 gallon capacity must be constructed of at least 24 gauge metal.

(9) Spec. 22C (§ 78.198 of this chapter). Plywood drum as prescribed by § 78.198–2(a) of this chapter, with inside spec. 2T (§ 78.21 of this chapter) polyethylene container.

(10) Spec. 6D (§ 78.102 of this chapter). Cylindrical steel overpack with inside spec. 2S (§ 78.35 of this chapter) polyethylene container.

(11) Spec. MC 310 or MC 311 (§ 78.330 or 78.331 of this chapter). Tank motor vehicles, rubber-lined.

(b) Hydrobromic acid greater than 49 percent strength but not over 63 percent strength must be packed in specification containers as follows:

(1) Spec. 22C (§ 78.198 of this chapter). Plywood drum as prescribed by § 78.198–2(a) of this chapter, with spec. 2T (§ 78.21 of this chapter) polyethylene container.

(2) Spec. 6D (§ 78.102 of this chapter). Cylindrical steel overpack with inside spec. 2S (§ 78.35 of this chapter) polyethylene container.

(3) Spec. 15A (§ 78.168 of this chapter. Wooden box having only one polyethylene bottle, with screw-cap closure, not over one-gallon capacity.

(4) Spec. MC 310 or MC 311 (§ 78.330 or 78.331 of this chapter). Tank motor vehicles, rubber-lined.

[1] Use of existing tank cars authorized, but new construction not authorized.

**§ 73.263 Hydrochloric (muriatic) acid, hydrochloric (muriatic) acid mixtures, hydrochloric (muriatic) acid solution, inhibited, sodium chlorite solution, and cleaning compounds, liquid, containing hydrochloric (muriatic) acid.**

(a) Hydrochloric (muriatic) acid, hydrochloric (muriatic) acid mixtures, hydrochloric (muriatic) acid solution, inhibited, sodium chlorite solution not exceeding 40 percent sodium chlorite, and cleaning compounds, liquid, containing hydrochloric (muriatic) acid must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers which must be glass, earthenware, polyethylene or other nonfragile plastic material resistant to the lading (bags are not authorized), not over 1 gallon each, except that inside containers up to 3 gallons each are authorized when only one is packed in each outside container.

(2) Spec. 5D (§ 78.84 of this chapter). Rubber-lined metal barrels or drums. Any such container that shows evidence of damage must be tested, before shipment, for defect in lining in the manner prescribed in spec. 5D.

(3) Spec. 43A (§ 78.18 of this chapter). Rubber drums.

(4) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs with glass or earthenware inside containers not over 2 gallons each.

(5) Spec. 1A, 1C, or 1K (§ 78.1, 78.3, or 78.14 of this chapter). Carboys in boxes or kegs.

(6) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(7) Spec. 1D, 1E, or 1EX (single-trip) (§§ 78.4, 78.7, or 78.6 of this chapter). Glass carboys in boxes or plywood drums, of not over 6.5 gallons nominal capacity. Means shall be provided so that accumulated total pressure in bottle shall not exceed 10 p. s. i. gauge at 130° F. or shall vent at a pressure not to exceed 10 p. s. i. gauge.

(8) Spec. 10A (§ 78.155 of this chapter). Rubber-lined wooden barrels or kegs.

(9) Spec. 103B,[1] 103B–W or 111A100–W–5 (§§ 79.200, 79.201 of this chapter). Tank cars. Authorized for acid not over 38 percent strength by weight. Except for hydrochloric (muriatic) acid of 22° Baume strength, and other fuming acids, safety vent of approved design equipped with frangible disc having ⅛ inch breather hole in the center thereof or a safety vent of approved design equipped with carbon discs permitting continuous venting may be used.

NOTE 1: Because of the present emergency and until further order of the Commission,

hydrochloric acid may be offered for transportation by carriers by water in conformity with Regulations for Explosives or Other Dangerous Articles on Board Vessels, 46 CFR 146.23-13, issued by the Commandant of the Coast Guard.

(10) Specs. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles lined with rubber or equally acid-resistant material of equivalent strength and durability. Unlined spec. MC 311 tank motor vehicles made from type 304L stainless steel authorized for sodium chlorite solution not exceeding 40 percent sodium chlorite only.

(11) Spec. 60 (§ 78.255 of this chapter). Portable tanks, rubber-lined.

(12) Spec. 103C–W (§ 78.283 of this chapter). Tank cars having tanks of type 304L stainless steel. Authorized for sodium chlorite solution not exceeding 40 percent sodium chlorite only.

(13) Spec. 1H, 15P, or 22C (§§ 78.13, 78.182, or 78.198 of this chapter). Metal crate with inside polyethylene carboy; or glued plywood or wooden box, or plywood drum as prescribed by § 78.198–2(a) of this chapter, with inside spec. 2T or spec. 2TL (§§ 78.21 or 78.27 of this chapter) polyethylene container.

(14) Spec. 17H, 37A, or 37B (§§ 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip) not over 5 gallons capacity each. Authorized only for hydrochloric (muriatic) acid solution, inhibited, containing not to exceed 15 percent hydrochloric (muriatic) acid. Drums must be lined throughout with a pliable plastic material impervious to the solution. Specs. 37A and 37B metal drums must be at least 24 gauge steel.

(15) Spec. 12A or 12B (§ 78.210 or § 78.205 of this chapter). Fiberboard boxes with inside containers of polyethylene, or other nonfragile plastic material resistant to the lading (bags are not authorized), not over 1 gallon capacity each, suitably cushioned to prevent movement within the box. Gross weight of completed package must not exceed 65 pounds.

(16) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 5 pints capacity each. Not more than six 5-pint glass bottles may be packed in one outside container. Shipper must have established that the completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(17) Spec. 6D or 37M (nonreusable container) (§ 78.102 or 78.134 of this chapter). Cylindrical steel overpacks with inside spec. 2S, 2SL, 2T or 2TL (§ 78.35, 78.35a, 78.21 or 78.27 of this chapter) polyethylene container.

(18) Spec. 37P (§ 78.133 of this chapter). Steel drums constructed of at least 24-gauge metal for drums exceeding 1 gallon capacity, with polyethylene liner (nonreusable container).

(19) Spec. 16D (§ 78.187 of this chapter). Wirebound wooden overwrap, with inside spec. 2T, 2TL, 2S, or 2SL (§§ 78.21, 78.27, 78.35, or 78.35a of this chapter) polyethylene container.

(20) [Reserved]

(21) Spec. 12C (§ 78.206 of this chapter). Fiberboard boxes with inside 5-gallon nominal capacity polyethylene bottles having minimum wall thickness of 0.015 inch and constructed with screw-type closures. Authorized gross weight not over 65 pounds. (See § 78.206–19 of this chapter.)

(22) Spec. 21C (§ 78.244 of this chapter). Fiber drum with inside spec. 2T, 2S, 2SL, or 2U (§ 78.21, § 78.35, § 78.35a, or § 78.24 of this chapter) polyethylene container. (See § 78.224–1(a)(2) of this chapter.)

(23) Spec. 12P (§ 78.211 of this chapter). Fiberboard boxes with inside spec. 2U (§ 78.24 of this chapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures.

(24) Spec. 16A (§ 78.185 of this chapter). Wirebound wooden box (see § 78.185–22 of this chapter) with inside specification 2U (§ 78.24 of this chapter) polyethylene container. The polyethylene container shall be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads.

(25) Spec. 22C (§ 78.198 of this chapter). Plywood drum as prescribed by § 78.198–2(b), with inside spec. 2TL (§ 78.27 of this chapter) polyethylene container not over 5 gallon nominal capacity.

(26) Spec. 33A (§ 78.150 of this chapter). Polystyrene cases (nonreusable container) with inside glass bottles not over 5 pints capacity each. Not more than four 5-pint bottles may be packed in one outside container.

(b) Hydrochloric acid of not over 20 percent strength (13.25° Baumé) and other corrosive liquids containing not over 20 percent hydrochloric acid in addition to containers prescribed in paragraph (a) of this section may be shipped in specification containers as follows:

(1) Spec. 10A (§ 78.155 of this chapter). Asphaltum-lined wooden barrels or kegs.

(2) Inside containers of not more than 8-fluid ounces capacity each, resistant to lading, packed in strong outside containers, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(c) When hydrochloric acid contains oils or solvents it must not be shipped in containers or tank cars lined with rubber.

(d) Hydrochloric acid mixtures of not over 28 percent strength, or cleaning compounds, liquid, containing not over 28 percent hydrochloric (muriatic) acid, in addition to the provisions of paragraphs (a) and (b) of this section, may be packed in specification containers as follows:

(1) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes constructed of at least 275-pound test (Mullen or Cady) double-wall corrugated fiberboard or 325-pound test (Mullen or Cady) double-faced corrugated fiberboard, with not more than 12 inside glass bottles, having acid-proof closures, of not over 32 ounces capacity each. Inside glass bottles must be separated and cushioned by suitable corrugated fiberboard partitions. The box must be equipped with top and bottom pads. (See § 78.205–32 of this chapter.)

(2) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 1 gallon capacity each. Not more than 4 inside containers exceeding 5 pints capacity each shall be in the outside container. Shipper must have established that the completed package meets test requirements prescribed by § 78.210–10 of this chapter.

**§ 73.264 Hydrofluoric acid.**

(a) Hydrofluoric acid must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers of natural rubber, ceresine, lead, or other hydrofluoric acid resistant material. These containers are authorized only for strengths of acid for which they are adequate, but in no case may the strength of acid exceed 70 percent.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers of natural rubber, lead, polyethylene, or other hydrofluoric acid resistant plastic not over one-pound capacity each. These containers are authorized only for strengths of acid for which they are adequate, but in no case shall the strength of acid exceed 70 percent.

(3) Spec. 16D (§ 78.187 of this chapter). Wirebound wooden overwrap, with inside spec. 2T (§ 78.21 of this chapter) polyethylene container. Authorized for hydrofluoric acid not over 70 percent strength.

(4) Spec. 12A or 12B (§ 78.210 or § 78.205 of this chapter). Fiberboard boxes with not more than 4 inside polyethylene bottles, having minimum 0.030 inch thickness of any part, not over 1-gallon nominal capacity each. Bottle closures must be made secure by sealing with pressure-sensitive plastic tape or other equally efficient means. Authorized for acid not over 70 percent strength. Shipper must have established that spec. 12A completed package meets test requirements prescribed by § 78.210–10 of this chapter. Authorized gross weight for spec. 12B fiberboard boxes not over 65 pounds; spec. 12A not over 80 pounds.

(5) [Reserved]

(6) [Reserved]

(7) Spec. 5A (§ 78.81 of this chapter). Unlined metal barrels or drums which have been subjected to adequate passivation or neutralization process (see Note 1). Authorized only for acid of not less than 60 percent and not more than 80 percent strength and all containers must be filled to not over 80 percent of capacity at 68° F. If containers are washed out with water, they must be repassivated before reshipment. (See Notes 1, 2, 3, 4 and 5.)

NOTE 1: Each metal container, before being put into service must be passivated by an efficient method.

NOTE 2: Containers not exceeding 55 gallons capacity each are authorized for carload, truckload, less-than-carload, and less-than-truckload shipment. Containers exceeding 55 gallons capacity each are authorized for carload or truckload shipments only but they must be loaded by consignor and unloaded by consignee.

NOTE 3: For less-than-carload or less-than-truckload shipments, containers must be of metal at least as heavy as 14 gauge United States standard for not over 20 gallons capacity each or 12 gauge for not over 55 gallons capacity each. Each container must be subjected to at least one of the following tests before shipment: By interior pressure of at least 15 pounds per square inch before filling or by holding for inspection for at least 24 hours after filling. In either case, each container must be vented prior to shipment.

NOTE 4: Because of the present emergency and until further order of the Commission, containers of not over 55-gallons capacity each, of 14-gauge metal, are authorized, provided test requirements of Note 3 are maintained and provided containers are retired from service after showing a 15 percent loss of tare weight.

NOTE 5: Hydrofluoric acid solutions and concentrations of 60 percent up to 65 percent, when shipped in unlined steel containers, must be inhibited so that the corrosive effect on steel must not be greater than that of hydrofluoric acid of 65 percent concentration.

(8) Spec. 103A,[1] 103A–W, 105A100,[1] 105A100–W, 111A100–F–2, 111A100–W–2, 111A100–W–4, or ARA–IV[1] (§§ 79.100, 79.101, 79.200, 79.201, of this chapter). Unlined metal tanks which have been subjected to adequate passivity or neutralization process. (See Note 1 to subparagraph (7) of this paragraph.) Authorized only for acid of 60 to 80 percent strength. If tanks are washed out with water they must be resubjected to passivity before reshipment.

NOTE 1: Hydrofluoric acid solutions and concentrations of 60 percent up to 65 percent, when shipped in unlined metal tank cars, must be inhibited so that the corrosive effect on steel must not be greater than that of hydrofluoric acid of 65 percent concentration.

(9) Spec. 43A (§ 78.18 of this chapter). Rubber drums. Authorized only for acid not over 65 percent strength. Any such container showing evidence of damage must be tested to 20 pounds hydrostatic pressure, without leakage, before using.

(10) Spec. 5D (§ 78.84 of this chapter). Limed metal barrels or drums. Authorized only for acid not over 62 percent strength. Any barrel or drum that shows evidence of damage must be tested before shipment for defects in lining in the manner prescribed in § 78.84–15 (a) of this chapter. Lining materials must meet the test prescribed in Notes 1, 2, and 3 below.

NOTE 1: Performance test. Test panels of linings for drums in hydrofluoric acid service must be subjected to a test in 62 percent hydrofluoric acid for a period of not less than 90 days. At the end of such period there must be no signs of deterioration of such lining material from chemical attack as evidenced by changes in its physical characteristics, and no signs of permeation of hydrofluoric acid through the sample as evidenced by blistering from the metal insert.

NOTE 2: Method of test. The test panel should be at least 2 inches by 6 inches with a steel insert completely covered by lining material. Test panels should be immersed in 62 percent hydrofluoric acid so that 50 percent of the panel is in contact with liquid and 50 percent in contact with vapor. Temperature of test to be maintained at 130° F. for the entire 90 days.

NOTE 3: Drums may be lined with material at least as thick as the sample material tested.

(11) Spec. 103B,[1] 103B–W, or 111A100–W–5 (§§ 79.200, 79.201 of this chapter). Tank cars, rubber-lined tanks. Authorized only for acid not over 40 percent strength.

(12) [Reserved]

(13) [Reserved]

(14) Spec. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles.

NOTE 1: Hydrofluoric acid solutions and concentrations of 60 percent up to 65 percent, when shipped in unlined tank motor vehicles, must be inhibited so that the corrosive effect on steel must not be greater than that of hydrofluoric acid of 65 percent concentration.

(15) [Reserved]

(16) Spec. 15P or 22C (§§ 78.182 or 78.198 of this chapter). Glued plywood or wooden box, or plywood drum as prescribed by § 78.198–2(a) of this chapter, with inside spec. 2T (§ 78.21 of this chapter) polyethylene container. Authorized for acid not over 70 percent strength.

(17) Spec. 6D (§ 78.102 of this chapter). Cylindrical steel overpack with inside spec. 2S, 2SL or 2T (§ 78.35, 78.35a, or 78.21 of this chapter) polyethylene container. Authorized for acid not over 70 percent strength.

(18) Spec. 37M (nonreusable container) (§ 78.134 of this chapter). Cylindrical steel overpack with inside spec. 2T (§ 78.21 of this chapter) polyethylene container. Spec. 37M overpack of over 15 gallons capacity must be constructed of at least 20-gauge steel. Authorized for acid not over 70 percent strength.

(b) Hydrofluoric acid, anhydrous (hydrogen fluoride) must be shipped in specification containers as follows:

(1) Spec. 3,[2] 3A, 3AA, 3B, 3C, 3E, 4, 4A, 25,[1] or 38,[1] also spec. 4B, 4BA, or 4C if not brazed (§§ 78.36, 78.37, 78.38, 78.40, 78.42, 78.48, 78.49, also 78.50, 78.51, or 78.52 of this chapter). Cylinders. Filling density must not exceed 85 percent of the pounds water weight capacity of the cylinder.

(2) Spec. 105A300–W, 112A400–W or ARA–V[1] (§§ 79.100, 79.101 of this chapter). Tank cars equipped with special valves and appurtenances approved for this particular service. Filling density must not exceed 90 percent of the pounds water weight capacity of the tank.

(3) Spec. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles.

(4) Spec. 51 (§ 78.245 of this chapter). Portable tanks.

(5) Because of the present emergency and until further order of the Commission, samples of anhydrous hydrofluoric acid for laboratory examination are authorized for transportation by rail freight, rail express, or highway, when packed in aluminum cylinders, net capacity not exceeding 100 c. c., tested hydrostatically to 500 pounds per square inch and retested quinquennially, and shipped in strong wooden boxes. The cylinders must be cushioned so as to give proper protection to their valves. Filling density must not exceed 80 percent of the water-weight capacity of the cylinder.

(6) Spec. 106A500[1] or 106A500–X (§§ 79.300 and 79.301 of this chapter). Tank cars. Tanks shall not be equipped with safety devices of any type and valves shall be protected by metal caps. Tanks shall be filled to a density not exceeding 85 percent of the water weight capacity of the tank.

NOTE 1: Tanks complying with ICC–106A (§§ 79.300 and 79.301 of this chapter) specification may be transported in or on motor vehicles and in the manner authorized in § 77.840(c) of this chapter, provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting.

(c) Containers must not be entirely filled. Unless otherwise provided in this part, sufficient outage (vacant space) must be allowed so that the liquid portion will not completely fill the container at 130° F. in order to prevent leakage or distortion of containers due to the expansion of the contents from increase in temperature during transit.

### § 73.265 Hydrofluosilicic acid.

(a) Hydrofluosilicic acid must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers of natural rubber, ceresine, or other material of equal efficiency resistant to hydrofluosilicic acid.

(2) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter) Wooden barrels or kegs with inside containers of natural rubber or ceresine.

(3) Spec. 10A (§ 78.155 of this chapter). Wooden barrels or kegs lined with asphaltum or other material of equal efficiency resistant to hydrofluosilicic acid.

(4) Spec. 16A (§ 78.185 of this chapter). Wirebound wooden box (see § 78.185–22 of this chapter) with inside specification 2U (§ 78.24 of this chapter) polyethylene container. The polyethylene container shall be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads.

(b) Hydrofluosilicic acid of not exceeding 40 percent strength may also be shipped when packed in specification containers as follows:

(1) Spec. 5D (§ 78.84 of this chapter). Rubber-lined metal barrels or drums. Any barrel or drum that shows evidence of damage must be tested before shipment for defect in lining in the manner prescribed in spec. 5D.

(2) Spec. 43A (§ 78.18 of this chapter). Rubber drums. Any drum showing evidence of damage must be tested to 20

[1] Use of existing tank cars authorized, but new construction not authorized.

[2] Use of existing cylinders authorized, but new construction not authorized.

pounds hydrostatic pressure, without leakage, before using.

(3) Spec. 103B,[1] 103B–W, or 111A100–W–5 (§§ 79.200, 79.201 of this chapter). Tank cars, rubber-lined tanks.

(4) Spec. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles, lined with rubber.

(c) Hydrofluosilicic acid containing no free hydrofluoric acid or other ingredient that will attack glass, may also be shipped when packed in specification containers as follows:

(1) Spec. 1A, 1C, 1D, or 1E (§§ 78.1, 78.3, 78.4, or 78.7 of this chapter). Carboys in boxes, in kegs, or plywood drums, for which the use of rubber stoppers and gaskets is also authorized.

(2) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside glass containers, not over 1 gallon each, with rubber or ground-in glass stoppers properly secured.

(4) The vacant space in containers of these acids must be sufficient so that when raised to a uniform temperature of 130° F. the vapor pressure shall not exceed 6 pounds per square inch.

(d) Hydrofluosilicic acid of not exceeding 32 percent strength may also be shipped when packed in specification containers as follows:

(1) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers of polyethylene, or other nonfragile plastic material resistant to the lading, not over 1 quart capacity each, suitably cushioned to prevent movement within the box. Gross weight of complete package must not exceed 65 pounds.

(2) Spec. 15P or 22C (§§ 78.182 or 78.198 of this chapter). Glued plywood or wooden box, or plywood drum as prescribed by § 78.198–2(a) of this chapter, with inside spec. 2T (§ 78.21 of this chapter) polyethylene container.

(3) Spec. 6D or 37M (nonreusable container) (§ 78.102 or 78.134 of this chapter). Cylindrical steel overpacks with inside spec. 2S or 2SL (§ 78.35 or 78.35a of this chapter) polyethylene container. Spec. 37M overpack shall be constructed of at least 20-gauge steel and shall not exceed 16 gallons capacity each.

(4) Spec. 37P (§ 78.133 of this chapter). Steel drums, not over 5-gallons capacity, with polyethylene liner (nonreusable container).

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drum with inside spec. 2S, 2SL, or 2U (§ 78.35, § 78.35a, or § 78.24 of this chapter) polyethylene container. (See § 78.224–1(a)(2) of this chapter.)

[1] Use of existing tank cars authorized, but new construction not authorized.

**§ 73.266 Hydrogen peroxide solution in water.**

(a) Hydrogen peroxide solution in water containing over 52 percent hydrogen peroxide by weight must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185 or 78.190 of this chapter). Wooden boxes with inside containers consisting of glass bottles not over 1 quart capacity each; bottles must have vented closure and must be packed in a metal container vented at bottom packed in another metal container vented at top; cushioning material shall be used between glass bottle and inner container and between inner and outer metal containers; cushioning material shall be vermiculite or equivalent in an amount at least 10 times the volume of the solution shipped and shall be wet with at least 10 percent water by volume to which has been added a stabilizing agent.

(2) Spec. 42D (§ 78.109 of this chapter). Aluminum drums with vented closure in top head; not over 30 gallons capacity; side openings not permitted. Closure must be sealed to prevent removal in transit and top head plainly marked "KEEP THIS END UP" or "KEEP PLUG UP TO PREVENT SPILLAGE". For shipments other than carload or truckload lots loaded by consignor and unloaded by consignee drums must be of design and venting arrangement approved by the Bureau of Explosives.

(b) Hydrogen peroxide solution in water containing not over 52 percent hydrogen peroxide by weight must be packed in specification containers as prescribed in paragraph (a) of this section or as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass or earthenware inside containers of not more than 1 gallon capacity each. Inside containers must be well cushioned. All material used for cushioning must be incombustible mineral matter, such as whiting, mineral wool, infusorial earth, asbestos, or sifted ashes. Cushioning of inside containers in outside wooden boxes by means of elastic packing, such as wooden strips or large corks fastened securely in position, is authorized if the completed package will pass the swing test prescribed for boxed carboys in spec. 1A (§ 78.1 of this chapter).

(2) Spec. 34B (§ 78.12 of this chapter). Aluminum carboys.

(3) Spec. 42D (§ 78.109 of this chapter). Aluminum drums with vented closure in top head; not over 55 gallons capacity. Closure must be sealed to prevent removal in transit and top head plainly marked "KEEP THIS END UP" or "KEEP PLUG UP TO PREVENT SPILLAGE". Aluminum drums of not over 30 gallons capacity already in service for the transportation of this material, manufactured prior to April 24, 1934, and of at least equal strength and efficiency as drums of like capacity authorized under spec. 42D, may be continued in use until further order of the Commission.

(4) Spec. 42E (§ 78.136 of this chapter). Aluminum drums (single-trip).

(5) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside polyethylene bottles having vented screw-cap closures not over 16 ounces capacity each. Each bottle must be completely contained in a securely closed polyethylene bag or tube constructed of material having minimum film thickness of 0.004 inch. Enclosed bottles must be separated from each other by use of fiberboard partitions or other suitable cushioning material and not more than 12 bottles shall be packaged in one box.

(6) Spec. 6D or 37M (nonreusable container) (§ 78.102 or 78.134 of this chapter). Cylindrical steel overpacks with inside spec. 2S or 2SL (§ 78.35 or 78.35a of this chapter) polyethylene container. The closures must be located in one head and must be vented to prevent accumulation of internal pressure and head plainly marked "KEEP THIS END UP" or "KEEP PLUG UP TO PREVENT SPILLAGE."

(c) Hydrogen peroxide solution in water containing over 8 percent hydrogen peroxide by weight and not exceeding 37 percent must be packed in specification containers as prescribed in paragraphs (a) or (b) of this section or as follows:

(1) Spec. 1A (§ 78.1 of this chapter). Glass carboys. The cushioning must be incombustible mineral material, elastic wooden-strip packing, or large elastic cushions such as corks fastened securely in position. The use of hay, excelsior, ground cork, or similar material, whether treated or untreated, is prohibited. The carboy stoppers must be vented so as to prevent accumulation of internal pressure; use of cork gasket impregnated with paraffin is authorized.

(2) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Spec. 1D or 1E (§ 78.4, or § 78.7 of this chapter). Glass carboys in boxes or plywood drums of not over 6.5 gallons nominal capacity. Means shall be provided so that accumulated pressure in bottle shall not exceed 10 pounds p. s. i. gauge at 130° F., or shall vent at a pressure not to exceed 10 pounds p. s. i. gauge. The cushioning must be incombustible mineral material, elastic wood-strip packing, or large elastic cushions such as corks fastened securely in position. The use of hay, excelsior, ground cork, or similar material, whether treated or untreated, is prohibited.

(4) Spec. 15A, 15B, 15C, 16A, or 19A (§ 78.168, § 78.169, § 78.170, § 78.185, or § 78.190 of this chapter). Wooden boxes with inside containers of polyethylene, or other plastic material resistant to the lading, not over 1 pint capacity or 16 ounces by weight each. Inside containers must be securely cushioned with incombustible mineral matter, such as

whiting, mineral wool, infusorial earth, asbestos, or sifted ashes.

(5) Spec. 1H, 15P, or 22C (§§ 78.13, 78.182 or 78.198 of this chapter). Metal crate with inside polyethylene carboy; or glued plywood or wooden box, or plywood drum as prescribed by § 78.198–2 (a) of this chapter, with inside spec. 2T (§ 78.21 of this chapter) polyethylene container.

(6) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, with inside aluminum bottles constructed of at least 99 percent pure aluminum of not over 5 pounds or 5 pints capacity each. Each bottle shall be individually partitioned and surrounded by incombustible mineral packing material in the outside shipping container. Bottle closure shall be by means of a threaded aluminum cap, fitted with polyethylene gasket or other equally efficient closing device. A venting device which will not leak liquid under conditions normally incident to transportation is permitted.

(7) [Reserved]

(8) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside polyethylene bottles not over 1 gallon capacity each with vented closures; such bottles over 32 ounces capacity each must be completely contained in a securely closed polyethylene bag or tube constructed of material having minimum film thickness of 0.003 inch. Alkaline solutions containing sodium hydroxide or other alkaline materials packed in glass or polyethylene bottles not over 1 gallon capacity each and with hydrogen peroxide solution contained in polyethylene bottles not over 1 gallon capacity each, when shipped as a wood bleach preparation, may be packed together in inside chipboard or corrugated fiberboard boxes or separated by corrugated fiberboard partitions; not more than six inside chipboard or corrugated fiberboard boxes having inside bottles not over 32 ounces each, or more than 4 one gallon bottles separated by corrugated fiberboard partitions may be packed in one outside box; completed package with mixed contents must be capable of withstanding a drop from a height of four feet onto solid concrete without failure of any inside container.

(9) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass or polyethylene bottles, not over 1-gallon capacity each. Each bottle closure must be vented and each bottle completely contained in a securely closed polyethylene bag or tube constructed of material having minimum film thickness of 0.003 inch. Shipper must have established that completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(10) Spec. 16D (§ 78.187 of this chapter). Wirebound wooden overwrap, with inside spec. 2T or 2TL (§§ 78.21 or 78.27 of this chapter) polyethylene container.

(d) Hydrogen peroxide solution in water containing over 8 percent hydrogen peroxide by weight and not exceeding 10 percent must be packed in specification containers as prescribed in paragraphs (a), (b), or (c) of this section or as follows:

(1) Spec. 10A (§ 78.155 of this chapter). Wooden barrels, paraffined-lined.

(e) Hydrogen peroxide solution in water not exceeding 52 percent hydrogen peroxide by weight, when shipped in tank cars, tank motor vehicles, or portable tanks in carload or truckload quantities only, is not subject to any other requirement of Parts 71–78 and 197 of this chapter.

(f) Hydrogen peroxide solution in water exceeding 52 percent hydrogen peroxide by weight may also be packed in specification containers as follows:

(1) Spec. 103A–AL–W (§ 78.292 of this chapter). Tank cars. Venting arrangement must be approved by the Bureau of Explosives.

(2) Spec. MC 310–$H_2O_2$ (§ 78.330 of this chapter). Tank motor vehicles. Tanks shall be welded construction of aluminum meeting the requirements of § 78.330–2(a) of this chapter having a minimum wall thickness of one-half inch, and must be built to a design working pressure of not less than 40 psig and shall be designed so that internal surfaces may be effectively cleaned and passivated; all openings to be located on top of tank; all valves and safety devices shall be provided with overturn protection and dust covers; metal identification plate required by § 78.330–17(a) of this chapter shall be marked "ICC MC 310–$H_2O_2$" and in addition the vehicle shall be clearly marked in letters not less than one inch high "FOR HYDROGEN PEROXIDE ONLY"; designs for venting and pressure relief devices must be approved by the Bureau of Explosives.

### § 73.267 Mixed acid (nitric and sulfuric acid) (nitrating acid).

(a) Mixed acid (nitric and sulfuric acid) (nitrating acid), when offered for transportation by carriers by rail freight, highway, or water must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside glass bottles not over 7 pounds capacity each, individually inclosed in tightly closed metal cans and cushioned therein with incombustible mineral material.

(2) Spec. 5C (§ 78.83 of this chapter). Metal barrels or drums of Type 304 ELC or 347 stainless steel only. (See paragraph (b) of this section.)

(3) Spec. 103A,[1] 103A–W, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars. (See paragraph (b) of this section.)

(4) Spec. 1A or 1C (§§ 78.1 or 78.3 of this chapter). Carboys in boxes or kegs. Authorized only for mixed nitric and sulfuric acid containing not over 17 percent nitric acid and containing at least 33 percent water. Straight-sided carboys must be used; cushioning must be incombustible mineral material, elastic wooden-strip packing, or large elastic cushions, such as cork, fastened securely in position. The use of hay, excelsior, ground cork, or similar material, whether treated or untreated, is prohibited.

(5) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(6) Spec. 1D, or 1E (§ 78.4, or § 78.7 of this chapter). Glass carboys in boxes or plywood drums of not over 6.5 gallons nominal capacity; authorized only for mixed nitric and sulfuric acid, containing not over 17 percent nitric acid and containing at least 33 percent water; means shall be provided so that accumulated pressure in bottle shall not exceed 10 pounds per square inch gauge at 130° F., or vent at pressure not to exceed 10 pounds per square inch gauge. Cushioning must be incombustible mineral material, elastic wooden strip packing, or large elastic cushions such as cork, fastened securely in position. The use of hay, excelsior, ground cork, or similar material, whether treated or untreated, is prohibited.

(7) Spec. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles. (See paragraph (b) of this section.)

(8) Spec. 60 (§ 78.255 of this chapter). Portable tanks. (See paragraph (b) of this section.)

(9) Spec. 5A (§ 78.81 of this chapter). Carbon steel barrels or drums. Authorized only for mixed acids containing less than 80 percent nitric acid. (See paragraph (b) of this section.)

(b) Mixtures of sulfuric acid and nitric acid (nitrating acid), shipped in tank cars, cargo tanks, tank trucks, or metal barrels or drums, shall contain not less than 10 percent sulfuric acid. These mixtures may contain:

(1) Up to 10 percent water with not less than 10 percent sulfuric acid.

(2) Up to 15 percent water with not less than 15 percent sulfuric acid.

(3) Up to 20 percent water with not less than 20 percent sulfuric acid.

(4) Up to 38 percent water with not less than 62 percent sulfuric acid.

(c) Mixed acid (nitric and sulfuric acid) (nitrating acid), when offered for transportation by rail express must be packed in specification containers as follows (also authorized for transportation by carriers by rail freight, highway, or water):

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside glass bottles with glass stoppers ground to fit, and these stoppers must be held in place by plaster of Paris covered by strong cloth securely tied. Glass bottles having necks with molded screw threads, must be closed by threaded-type acid-resistant plastic caps. Caps must be equipped with an elastic composition cushion and with glass, porcelain or similar liner which must be impervious to the acid. Such caps, when secured in place by at least one complete continuous thread, must be capable of preventing any leakage of the liquid.

(2) Or glass bottles having necks with molded screw threads must be closed by threaded-type acid-resistant caps. Caps must be lined with a resilient liner which

[1] Use of existing tank cars authorized, but new construction not authorized.

must be impervious to the acid. Such caps, when secured in place by at least one complete continuous thread, must be capable of preventing any leakage of the acid.

(3) Each bottle must be placed in a tightly closed metal container and well cushioned therein on all sides with incombustible mineral packing material, such as whiting, mineral wool, infusorial earth (kieselguhr), asbestos, sifted ashes, or powdered china clay, etc. The metal container must be packed in the outside container, and well cushioned by incombustible mineral packing material as herein described.

(4) Not more than 3½ pounds (1¼ quarts) of mixed acid may be shipped in one outside package.

**§ 73.268 Nitric acid.**

(a) Nitric acid exceeding 40 percent concentration in any quantity must not be packed with any other article.

(b) Nitric acid in any concentration which does not contain significant quantities of sulfuric acid or hydrochloric acid as impurities, when offered for transportation by carriers by rail freight, highway, or water must be packed in specification containers as follows:

(1) Spec. 103C–W (§ 78.283 of this chapter). Tank cars.

(2) The use of spec. 103C–AL special aluminum alloy tank cars is authorized for the transportation of 95 percent or greater nitric acid as provided in special orders of November 14, 1939, June 7, 1940, and August 19, 1941.

(3) Spec. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles.

(4) Spec. 5C (§ 78.83 of this chapter). Metal barrels or drums. Authorized for concentrations of nitric acid as limited by § 78.83–3 (c) of this chapter. Containers weighing less than 85 percent of their original marked weight are not authorized. Spec. 5C drums already in service for transportation of this material, manufactured prior to October 1, 1949, may be continued in service within the above limitations until further order of the Commission.

(5) Containers as specified in paragraphs (c), (d), (e), and (f), and within percentage limitations of this section.

(c) Nitric acid of 80 percent or greater concentration which does not contain significant quantities of sulfuric acid or hydrochloric acid as impurities, when offered for transportation by carriers by rail freight, highway, or water, in addition to and within limitations of paragraphs (b), (d), and (e) of this section, may be packed in specification containers as follows:

(1) Spec. 42B or 5X (§§ 78.107, or 78.91 of this chapter); also 42,[1] if made and marked prior to October 1, 1930. Aluminum drums, or aluminum-lined steel drums.

(2) Spec. 103A–AL–W (§ 78.292 of this chapter). Tank car.

(d) Nitric acid of 90 percent or greater concentration, when offered for transportation by carriers by rail freight, highway, or water, in addition to and within limitations of paragraphs (b) and (c) of this section, may be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, 19A, 11A, or 11B (§§ 78.168, 78.169, 78.170, 78.185, 78.190, 78.160, or 78.161 of this chapter). Wooden boxes, barrels and kegs with inside containers which must be glass bottles not over 5 pints capacity each, individually inclosed in tightly closed metal cans and cushioned therein with sufficient incombustible mineral material. (See paragraphs (g) and (h) of this section.)

(e) Nitric acid of concentration of less than 90 percent, when offered for transportation by carriers by rail freight, highway, or water, in addition to and within limitations of paragraphs (b), (c), and (f) of this section, may be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, 19A, 11A, or 11B (§§ 78.168, 78.169, 78.170, 78.185, 78.190, 78.160, or 78.161 of this chapter). Wooden boxes, barrels and kegs with inside containers which must be glass bottles not over 5 pints capacity each. (See paragraphs (g) and (h) of this section.)

(f) Nitric acid of concentration of 72 percent or less, when offered for transportation by carriers by rail freight, highway, or water, in addition to and within limitations of paragraphs (b) and (e) of this section, may be packed in specification containers as follows:

(1) Spec. 1A, 1C, or 1K (§ 78.1, 78.3, or 78.14 of this chapter). Straight sided carboys in boxes or kegs.

(2) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(3) Spec. 1D, or 1E (§ 78.4, or § 78.7 of this chapter). Glass carboys in boxes or plywood drums of not over 6.5 gallons nominal capacity. Means shall be provided so that accumulated pressure in bottle shall not exceed 10 pounds per square inch gauge at 130° F., or shall vent at a pressure not to exceed 10 pounds per square inch gauge.

(4) Cushioning for carboys must be incombustible mineral material, elastic wooden strips, natural cork blocks or rubber blocks. Other materials may be used if approved by the Bureau of Explosives. The use of hay, excelsior, loose ground cork, or similar materials, whether treated or untreated, is prohibited.

(5) Spec. 60 (§ 78.255 of this chapter). Portable tanks, glass-lined.

(6) Spec. 33A (§ 78.150 of this chapter). Polystyrene cases (nonreusable container) with inside glass bottles not over 5 pints capacity each. Not more than four 5–pint bottles may be packed in one outside container.

(g) Closures for bottles. Glass stoppers ground to fit and held in place by plaster of Paris covered by a strong cloth securely tied; or:

(1) Threaded-type acid-resistant caps with gasket or lining impervious to the acid and sufficiently resilient, or cushioned, to give an acidproof closure; at least 1 complete continuous thread is required to be engaged when bottle is closed for shipment.

(h) Cushioning inside containers. Inside containers must be well cushioned. Except as provided in subparagraph (1) of this paragraph, all material for cushioning must be incombustible mineral material such as whiting, mineral wool, infusorial earth, asbestos, sifted ashes, etc. The use of hay, excelsior, ground cork, or similar material, whether treated or untreated, is prohibited. Where the cushioning material is very fine or powdery, separate partitions for the individual inside containers shall be provided to prevent the bottles from shifting and coming in contact with each other, and the box must be tight to prevent sifting of cushioning material.

(1) Cushioning of inside containers in outside specification wooden boxes by means of elastic packings, such as wooden strips, large corks, or pads formed of an expanded polystyrene resin that is resistant to the action of nitric acid, fastened securely in position, is authorized if the completed package will pass the swing test prescribed for boxed carboys.

(i) Nitric acid of any concentration, when offered for transportation by rail express, must be packed in specification containers as follows (also authorized for transportation by carriers by rail freight, highway, or water):

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside glass bottles with glass stoppers ground to fit, and these stoppers must be held in place by plaster of Paris covered by strong cloth securely tied. Glass bottles having necks with molded screw threads, must be closed by threaded type acid-resistant plastic caps. Caps must be equipped with an elastic composition cushion and with glass porcelain or similar liner which must be impervious to the acid. Such caps, when secured in place by at least one complete continuous thread, must be capable of preventing any leakage of the acid.

(2) Or glass bottles having necks with molded screw threads must be closed by thread-type acid-resistant caps. Caps must be lined with a resilient liner which must be impervious to the acid. Such caps, when secured in place by at least one complete continuous thread, must be capable of preventing any leakage of the acid.

(3) Each bottle must be placed in a tightly closed metal container, and well cushioned therein on all sides with incombustible mineral packing material, such as whiting, mineral wool, infusorial earth (kieselguhr), asbestos, sifted ashes, or powdered china clay, etc. The metal container must be packed in outside containers, and well cushioned by incombustible mineral packing material as described in this section.

[1] Use of existing drums authorized, but new construction not authorized.

(4) Not more than 5 pints of nitric acid shall be shipped in one outside package.

(j) Nitric acid of not over 50 percent concentration, when offered for transportation by rail express, may in addition to the provisions of paragraph (i) of this section be packed in specification containers as follows (also authorized for transportation by carriers by rail freight, highway, or water):

(1) Spec. 15A, 15B, 15C, 16A, 19A, or 12B (§ 78.168, § 78.169, § 78.170, § 78.185, § 78.190, or § 78.205 of this chapter). Wooden or fiberboard boxes with not over 12 inside glass ampoules having capacity not over 4 fluid ounces each. Each glass ampoule must be well cushioned with incombustible mineral packing material, such as vermiculite or other equally efficient material, and be packed in a cylindrical cardboard tube having wall thickness of at least ⅛ inch, with the inside coated with wax, and be equipped with metal bottom and with metal screw-cap top. The inside packages must be separated by efficient means.

**§ 73.269 Perchloric acid.**

(a) Perchloric acid in excess of 72 percent must not be shipped. When not exceeding 72 percent strength must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or § 78.190 of this chapter). Wooden boxes with glass inside containers consisting of glass bottles not over 5 pints capacity each, cushioned with incombustible mineral material in amount sufficient to absorb the acid.

(2) Spec. 1A, 1C, 1D, 1E, or 1K (§ 78.1, 78.3, 78.4, 78.7, or 78.14 of this chapter). Glass carboys in boxes, kegs or plywood drums.

(3) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(4) Spec. 33A (§ 78.150 of this chapter). Polystyrene cases (nonreusable container) with inside glass bottles not over 5 pints capacity each. Not more than four 5-pint bottles may be packed in one outside container.

(b) Cushioning for carboys must be incombustible mineral material, elastic wooden strips, natural cork blocks or rubber blocks. Other materials may be used if approved by the Bureau of Explosives. The use of hay, excelsior, loose ground cork, or similar materials, whether treated or untreated, is prohibited.

(c) Perchloric acid in any quantity must not be packed with any other article.

(d) Closures for bottles. Required as follows:

(1) Glass stoppers ground to fit and held in place by plaster of Paris covered by a strong cloth securely tied.

(2) Threaded-type acid-resistant caps with a gasket or lining impervious to the acid and sufficiently resilient, or cushioned, to give an acid-proof closure; at least one complete continuous thread is required to be engaged when bottle is closed for shipment.

(e) Inside containers must be well cushioned. All material for cushioning must be incombustible mineral material, such as whiting, mineral wool, infusorial earth (kieselguhr), asbestos, sifted ashes, or powdered china clay, etc. The use of hay, excelsior, ground cork, or similar material, either treated or untreated, is prohibited. Where the cushioning material is very fine or powdery, separate partitions for the individual inside containers should be provided to prevent the bottles from shifting and coming in contact with each other, and the box must be tight to prevent sifting of cushioning material.

(1) Cushioning of inside containers in outside wooden boxes by means of elastic packings, such as wooden strips, large corks, or pads formed of an expanded polystyrene resin that is resistant to the action of perchloric acid, fastened securely in position, is authorized if the completed package will pass the swing test prescribed for boxed carboys.

**§ 73.270 Phosphorus tribromide.**

(a) Phosphorus tribromide must be packed in specification containers as follows:

(1) Spec. 5H (§ 78.87 of this chapter). Lead-lined metal barrels or drums.

(2) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs with glass or earthenware inside containers not over 2 gallons each; the glass or earthenware containers must be cushioned in the outside containers by means of incombustible elastic packing material of such nature that a mixture of the liquid and the packing material will not cause fires or heating.

(3) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass or earthenware inside containers not over 1 gallon each, except that inside containers up to 3 gallons each are authorized when only one is packed in an outside container.

(4) Spec. 28 (§ 78.8 of this chapter). Metal-jacketed lead carboys.

(5) Spec. 5K or 5M (§§ 78.88 or 78.90 of this chapter). Nickel or Monel drums not over 10 gallons capacity each.

**§ 73.271 Phosphorus oxybromide, phosphorus oxychloride, phosphorus trichloride, and thiophosphoryl chloride.**

(a) Phosphorus oxybromide, phosphorus oxychloride, phosphorus trichloride, and thiophosphoryl chloride must be packed in specification containers as follows:

(1) Spec. 5H (§ 78.87 of this chapter). Lead-lined metal barrels or drums.

(2) Spec. 5K (§ 78.88 of this chapter). Nickel drums.

(3) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs with glass or earthenware inside containers not over 2 gallons each; the glass or earthenware containers must be cushioned in the outside containers by means of incombustible elastic packing material of such nature that a mixture of the liquid and the packing material will not cause fires or heating.

(4) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass or earthenware inside containers not over 1 gallon each, except that inside containers up to 3 gallons each are authorized when only one is packed in an outside container.

(5) Spec. 28 (§78.8 of this chapter). Metal-jacketed lead carboys.

(6) Spec. 60 (§ 78.255 of this chapter). Portable tanks when tanks are lead-lined.

(7) Spec. 103A–N–W (§ 78.299 of this chapter). Tank cars. Tank must be of solid nickel at least 99 percent pure and all cast metal parts of the tank in contact with the lading have a minimum nickel content of approximately 96.7 percent.

(8) Spec. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles when tanks are lead-lined or nickel-lined. If nickel-lined, the lining shall comprise at least 1/32 inch of uncontaminated nickel at all points including rivets, welds and other joints, and edges of tank plates.

(9) Spec. 103A,[1] 103A–W, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars. Spec. 103A,[1] tanks must be lead-lined steel or made of steel at least 10 percent nickel clad. Spec. 103A–W, 111A100–F–2, or 111A100–W–2 tanks must be lead-lined steel or made of steel with a minimum thickness of nickel cladding 1/16 inch. Nickel cladding in tanks must have a minimum nickel content of at least 99 percent pure nickel.

(10) Spec. 103E–W (§ 78.298 of this chapter). Tank cars made from Type 316 stainless steel. Authorized for phosphorus trichloride and thiophosphoryl chloride only.

(11) Spec. 103A,[1] 103A–W, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars. Authorized for phosphorus trichloride only.

(12) Spec. 5A or 5C (§§ 78.81 or 78.83 of this chapter). Metal barrels or drums. Authorized for phosphorus trichloride and thiophosphoryl chloride.

(13) Spec. MC 310 or MC 311 (§§ 78.330 or 78.331 of this chapter). Tank motor vehicles when tanks are clad with 20 percent Type 316 stainless steel. Authorized for phosphorus oxychloride only.

(14) Spec. MC 310 or MC 311 (§ 78.330 or 78.331 of this chapter). Tank motor vehicles made from types 304, 316, or 347 stainless steels. Authorized for phosphorus trichloride only.

(15) Spec. MC 311 (§ 78.331 of this chapter). Tank motor vehicle. Tank must be of solid nickel at least 99 percent pure and all cast metal parts of the tank in contact with the lading have a minimum nickel content of approximately 96.7 percent. Authorized for phosphorus oxychloride and phosphorus trichloride only.

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[1] Use of existing tank cars authorized, but new construction not authorized.

(16) Spec. 17C (§ 78.115 of this chapter). Metal drums (single-trip) with no opening exceeding 2.3 inches in diameter. When drums are not constructed of stainless steel they must be lined with a material impervious to the lading. Authorized for phosphorus trichloride only.

(17) Spec. 5M (§ 78.90 of this chapter). Monel drums not over 10 gallons capacity each.

**§ 73.272 Sulfuric acid.**

(a) Sulfuric acid (oleum, oil of vitriol, etc.) must be packed in specification containers as follows:

(b) Sulfuric acid solutions of not over 25 percent concentrations, in inside containers of not more than 8 ounces capacity each, resistant to the lading, packed in strong outside containers and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in event of breakage, are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(c) Sulfuric acid of any concentration:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass or earthenware inside containers, not over one gallon capacity each, except that such containers up to three gallons capacity may be used when only one such container is packed in each outside wooden box.

(2) Spec. 31 (§ 78.15 of this chapter). Jugs in tubs.

(3) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs with glass or earthenware inside containers not over 2 gallons capacity each.

(4) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(5) Spec. 22A or 22B (§§ 78.196 or 78.197 of this chapter). Wooden drums, glued plywood, with not more than 1 inside container of glass or earthenware not over 1-gallon capacity.

(6) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 5 pints capacity each. Not more than six 5-pint glass bottles may be packed in one outside container. Shipper must have established that the completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(d) For sulfuric acid of concentrations not less than 100 percent and not more than 115 percent (approximate):

(1) Spec. 5C (§ 78.83 of this chapter). Metal barrels or drums of Type 304, 316, or 347 stainless steel or other types of stainless steel of equivalent corrosion resistance and physical properties.

(e) For sulfuric acid of concentrations not to exceed 100.5 percent:

(1) Spec. 1A, 1C, or 1K (§ 78.1, 78.3, or 78.14 of this chapter). Carboys in boxes or kegs.

(2) Spec. 1D or 1E (§ 78.4 or § 78.7 of this chapter). Glass carboys in boxes or plywood drums, of not over 6.5 gallons nominal capacity.

(3) Spec. 33A (§ 78.150 of this chapter). Polystyrene cases (nonreusable container) with inside glass bottles not over 5 pints capacity each. Not more than four 5-pint bottles may be packed in one outside container.

(f) For sulfuric acid of concentrations not to exceed 95 percent (approximately 1.835 specific gravity) (66° Baumé):

(1) Spec. 5H (§ 78.87 of this chapter). Metal barrels or drums.

(2) Spec. 1H, 15P, or 22C (§ 78.13, 78.182, or 78.198 of this chapter). Metal crate with inside polyethylene carboy; or glued plywood or wooden box, or plywood drum as prescribed by § 78.198–2 (a) of this chapter, with inside spec. 2T or 2TL (§ 78.21 or 78.27 of this chapter) polyethylene container.

(3) Spec. 6D or 37M (nonreusable container) (§ 78.102 or 78.134 of this chapter). Cylindrical steel overpacks with inside spec. 2S, 2SL or 2T (§ 78.35, 78.35a, or 78.21 of this chapter) polyethylene container. Overpack of 55 gallon capacity when used for sulfuric acid of 93 percent or greater concentration shall be constructed of at least 16-gauge steel throughout.

(4) Spec. 16D (§ 78.187 of this chapter). Wirebound wooden overwrap, with inside spec. 2T, 2TL, 2S, or 2SL (§ 78.21, 78.27, 78.35, or 78.35a of this chapter), polyethylene container.

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drum with inside spec. 2T or 2U (§ 78.21 or 78.24 of this chapter) polyethylene containers not over 15 gallons capacity each. (See § 78.224–1(a) (2) of this chapter.)

(6) [Reserved]

(7) Spec. 16A (§ 78.185 of this chapter). Wirebound wooden box (see § 78.185–22 of this chapter) with inside specification 2U (§ 78.24 of this chapter) polyethylene container. The polyethylene container shall be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads.

(8) Spec. 12P (§ 78.211 of this chapter). Fiberboard boxes with inside spec. 2U (§ 78.24 of this chapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures.

(9) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside polyethylene containers or other containers of plastic compatible with the chemical, not over 1-gallon capacity each. Inside containers must be cushioned to prevent movement in the outside box. Not more than four 1-gallon inside containers shall be packed in one outside container. Authorized gross weight not over 75 pounds.

(g) For sulfuric acid of concentrations 77.5 percent (approximately 1.7019 specific gravity) (59.8° Baume) or greater concentrations with or without an inhibitor, provided such acid has a corrosive effect on steel measured at 100° F. no greater than 66° Baume commercial sulfuric acid:

(1) Spec. 5A or 5C (§ 78.81 or § 78.83 of this chapter). Metal barrels or drums. Spec. 5C metal barrels or drums must be of types 304, 316, or 347 stainless steel and are authorized only for sulfuric acid of 93 percent or greater strength.

NOTE 1: Tapered steel plugs, without gaskets, for standard spec. 5A flanges are authorized. Threaded length must not be less than 1⅛ inches. Major diameter of plug not to exceed 2 11/32 inches and minor diameter not less than 2 7/32 inches.

(2) Spec. 17F (§ 78.117 of this chapter). Metal barrels or drums (single-trip only). Drums equipped with vented closures of an experimental type approved by the Bureau of Explosives are also authorized for export shipments.

(h) For sulfuric acid of concentrations 65.25 percent (approximately 1.559 specific gravity) (52° Baume) or greater concentrations, provided the corrosive effect on steel measured at 100° F. is not greater than that of 52° Baume commercial sulfuric acid:

(1) Spec. 60 (§ 78.255 of this chapter). Portable tank.

(2) Spec. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles.

(3) Spec. 103A,[1] 103A–W, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars. Tank cars used for sulfuric acid, mixed acid (nitric and sulfuric) (nitrating acid), and other fuming acids, may be equipped with safety vents incorporating lead discs having a ⅛ inch breather hole in the center thereof. The ⅛ inch breather hole in lead discs of safety vents on oleum tank cars is not permitted.

(i) For sulfuric acid of concentrations not to exceed 51 percent (approximately 1.408 specific gravity (42° Baumé), unless otherwise provided:

(1) Spec. 5D (§ 78.84 of this chapter). Rubber-lined metal drums.

(2) Spec. 60 (§ 78.255 of this chapter). Portable tanks (rubber-lined).

(3) Spec. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles (rubber-lined).

(4) Spec. 103B,[1] 103B–W, or 111A100–W–5 (§§ 79.200, 79.201 of this chapter). Tank cars.

(j) Gaskets must be in a plastic condition when applied to carboys in boxes, barrels or kegs containing water-white sulfuric acid (electrolyte grade) of concentrations 77.5 percent (approximately 1.7019 specific gravity) (59.8° Baume).

(k) Soft rubber gaskets are authorized on carboys in boxes, barrels or kegs containing sulfuric acid of not over 51 percent concentrations (approximately 1.408 specific gravity) (42° Baume).

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[1] Use of existing tank cars authorized, but new construction not authorized.

(1) Because of the present emergency and until further order of the Commission, sulfuric acid may be offered in transportation by carriers by water in conformity with Regulations for Explosives or Other Dangerous Articles on Board Vessels, 46 CFR 146.23-10, issued by the Commandant of the Coast Guard.

**§ 73.273 Sulfur trioxide, stabilized.**

(a) Sulfur trioxide, stabilized, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass or earthenware inside containers not over 1 gallon each.

(2) Spec. 5A or 5C (§§ 78.81 or 78.83 of this chapter). Metal barrels or drums, not over 55 gallons capacity each.

(3) Spec. 17F (§78.117 of this chapter). Metal drums (single-trip).

(4) Spec. 103A,[1] 103A-W, 105A300-W, 111A100-F-2, or 111A100-W-2 (§§ 79.100, 79.101, 79.200, 79.201 of this chapter). Tank cars. Authorized only for stabilized sulfur trioxide. Tank cars shall have safety valves of approved design and not subject to rapid deterioration by the lading. Cars equipped with interior hearter coils not permitted.

(5) Spec. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles. Authorized only for stabilized sulfur trioxide. Tanks must be equipped with spring-relief safety valves. Tanks equipped with interior heater coils not permitted.

**§ 73.274 Fluosulfonic acid.**

(a) Fluosulfonic acid must be packed in containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers which must be not over 1 gallon each, except that inside containers up to 3 gallons are authorized when only one is packed in each outside container, as prescribed in Notes 1 and 2 to this section.

NOTE 1: Bottles manufactured of Pyrex glass or glass of equal acid resistance, authorized only for material containing an excess of sulfur trioxide, with Pyrex glass stoppers, or glass stoppers of equal acid resistance, ground to fit and held in place by plaster of Paris covered by strong cloth securely tied; each bottle must be placed in a metal container, well cushioned therein with incombustible absorbent materials such as mineral wool, infusorial earth (kieselguhr), asbestos, etc.

NOTE 2: Or steel containers, 14 gauge steel throughout, welded heads and side seams, equipped with ¾ inch welded flange and plug. Threads for plug must be 8 or less per inch. Each drum must be tested for leakage with 15 pounds hydrostatic pressure.

(2) Spec. 5A or 17F (single-trip) (§ 78.81 or 78.117 of this chapter). Metal barrels or drums not over 55 gallons capacity each.

(3) Spec. 103A,[1] 103A-W, 111A100-F-2, or 111A100-W-2 (§§ 79.200, 79.201 of this chapter). Tank cars.

[1] Use of existing tank cars authorized, but new construction not authorized.



**§ 73.275 Difluorophosphoric acid, anhydrous, monofluorophosphoric acid, anhydrous, hexafluorophosphoric acid, and mixtures thereof.**

(a) Difluorophosphoric acid, anhydrous, monofluorophosphoric acid, anhydrous, hexafluorophosphoric acid, and mixtures thereof must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185 or § 78.190 of this chapter) wooden boxes, spec. 12B (§ 78.205 of this chapter) fiberboard boxes, or spec. 21C (§ 78.224 of this chapter) fiber drums with inside containers which must be polyethylene, or other nonfragile plastic bottles resistant to the lading, not over 2 gallons capacity each, closed by means of threaded acid-resistant caps; caps must have at least one complete continuous thread and be additionally sealed to the bottle to prevent turning of cap after bottle is closed for shipment.

(2) Spec. 42B, 42C, or 42D (§ 78.107, 78.108, or 78.109 of this chapter). Aluminum drums not over 55 gallons capacity.

(3) Spec. 22C (§ 78.198 of this chapter). Plywood drum as prescribed by § 78.198-2(a) of this chapter, with inside spec. 2T (§ 78.21 of this chapter) polyethylene container.

(4) Spec. 60 (§ 78.255 of this chapter). Portable tanks. Authorized for inhibited acids enumerated in this paragraph only.

(b) Inside containers must be packed so they cannot change position in the outside container while in transit and inert absorbent cushioning material must be used where necessary.

**§ 73.276 Anhydrous hydrazine and hydrazine solution.**

(a) Anhydrous hydrazine and hydrazine solution containing 50 percent or less of water must be packed in specification containers as follows:

(1) Spec. 1D (§ 78.4 of this chapter). Boxed glass carboys.

(2) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Wooden boxes with inside containers which must consist of glass bottles not exceeding 1-gallon capacity each, cushioned by means of vermiculite within tin cans which shall be tightly closed.

(3) Spec. 5, 5A, 5C, or 17E (single-trip) (§§ 78.80, 78.81, 78.83, or 78.116 of this chapter). Metal barrels or drums which shall be of type 304 or 347 stainless steel, with openings not exceeding 2.3 inches in diameter.

(4) Spec. 103C-W or 111A100-W-6 (§§ 79.200, 79.201 of this chapter). Tank cars having tanks of type 304L or 347 stainless steel with molybdenum content not exceeding one-half of one percent. Spec. 111A100-W-6 tanks must not be equipped with bottom outlets. Vapor space in tanks must be filled with nitrogen gas at atmospheric pressure.

(5) Spec. 103A-AL-W (§ 78.292 of this chapter). Tank cars. Vapor space in tank must be filled with nitrogen gas at atmospheric pressure. Authorized for anhydrous hydrazine only.

(6) MC 310 or MC 311 (§ 78.330 or 78.331 of this chapter). Tank motor vehicles having tanks of type 304L or 347 stainless steel with molybdenum content not exceeding one-half of one percent. Vapor space in tank must be filled with nitrogen gas at atmospheric pressure.

**§ 73.277 Hypochlorite solutions.**

(a) Hypochlorite solutions containing more than 7 percent available chlorine by weight must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C or 12B. (§§ 78.168, 78.169, 78.170 or 78.205 of this chapter). Wooden or fiberboard boxes with glass, earthenware, or polyethylene inside containers of not more than 1 gallon capacity each. Packages must not weigh over 65 pounds gross nor contain more than 4 glass or earthenware inside containers if their capacity is greater than 5 pints each, or more than six such inside polyethylene containers.

(2) Spec. 1A, 1C, 1D, or 1E (§§ 78.1, 78.3, 78.4 or 78.7 of this chapter). Glass carboys in boxes, kegs, or plywood drums.

(3) Spec. 1H, 15P, or 22C (§§ 78.13, 78.182, or 78.198 of this chapter). Metal crate with inside polyethylene carboy; or glued plywood or wooden box, or plywood drum as prescribed by § 78.198-2(a) of this chapter, with inside spec. 2T (§ 78.21 of this chapter) polyethylene container. Spec. 15P glued plywood or wooden box may contain spec. 2S (§ 78.35 of this chapter) polyethylene drum. Authorized for not over 16 percent sodium hypochlorite solution only.

(4) Spec. 6D (§ 78.102 of this chapter). Cylindrical steel overpack with inside spec. 2S or 2SL (§ 78.35 or 78.35a of this chapter) polyethylene container. Authorized for not over 16 percent sodium hypochlorite solution only.

(5) Spec. 12P (§ 78.211 of this chapter). Fiberboard boxes with inside spec. 2U (§ 78.24 of this chapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections that could cause failures.

(b) Closures for inside containers and carboys must be vented and must be of a material resistant to the lading and capable of preventing leakage of liquid contents.

(c) [Reserved]

(d) Glass or earthenware containers of not more than 4-fluid ounces capacity each, packed in strong outside containers, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(1) Polyethylene pouches not over 2½ ounces capacity each, heat sealed, and formed of polyethylene, or other suitable

plastic, not less than .0035 inch in thickness to which shall be laminated a .0015 inch, 25-pound basis weight white sulphate paper, when securely packed not more than 144 pouches in a strong fiberboard box (absorbent cushioning material not required), are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(e) Shipments by tank motor vehicle are not subject to any other requirement of Parts 71–78 and 197 of this chapter.

**§ 73.278 Nitrohydrochloric acid.**

(a) Nitrohydrochloric acid, which is a mixture of nitric acid not over 1.42 specific gravity and hydrochloric acid not over 1.19 specific gravity in the approximate proportions of one part nitric acid and three parts hydrochloric acid, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass inside containers of not over 5 pints capacity each, individually inclosed in tightly closed metal cans and cushioned therein with sufficient incombustible mineral material.

(b) Nitrohydrochloric acid diluted, is a solution of nitrohydrochloric acid as described in paragraph (a) of this section, which has been diluted to not less than five times the volume of water and must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass inside containers of not over 5 pints capacity each, individually inclosed in tightly closed metal cans and cushioned therein with sufficient incombustible mineral material.

(2) Spec. 1A, 1D, or 1E (§§ 78.1, 78.4, or 78.7 of this chapter). Glass carboys in boxes or plywood drums, not over 5 gallons nominal capacity for spec. 1A and not over 6.5 gallons nominal capacity for spec. 1D and 1E.

**§ 73.279 Anisoyl chloride.**

(a) Anisoyl chloride must be packed in specification containers as follows:

(1) Spec. 5C (§ 78.83 of this chapter). Metal barrels or drums.

(2) Spec. 5 (§ 78.80 of this chapter). Metal barrels or drums of stainless steel only, with flanges for closures welded in place and having no opening exceeding 2.3 inches in diameter.

(b) Inside containers of not more than 8-fluid ounces capacity each, resistant to lading, packed in strong outside containers, and cushioned with absorbent material in sufficient quantity to completely absorb liquid contents in the event of breakage, are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

**§ 73.280 Allyl trichlorosilane, amyl trichlorosilane, butyl trichlorosilane, cyclohexenyl trichlorosilane, cyclohexyl trichlorosilane, diethyl dichlorosilane, diphenyl dichlorosilane, dodecyl trichlorosilane, ethyl phenyl dichlorosilane, hexadecyl trichlorosilane, hexyl trichlorosilane, nonyl trichlorosilane, octadecyl trichlorosilane, octyl trichlorosilane, phenyl trichlorosilane, and propyl trichlorosilane.**

(a) Allyl trichlorosilane, amyl trichlorosilane, butyl trichlorosilane, cyclohexenyl trichlorosilane, cyclohexyl trichlorosilane, diethyl dichlorosilane, diphenyl dichlorosilane, dodecyl trichlorosilane, ethyl phenyl dichlorosilane, hexadecyl trichlorosilane, hexyl trichlorosilane, nonyl trichlorosilane, octadecyl trichlorosilane, octyl trichlorosilane, phenyl trichlorosilane, and propyl trichlorosilane must be packed in specification containers as follows:

(1) Spec. 15A or 16B (§§ 78.168 or 78.186 of this chapter). Wooden boxes with glass inside containers not over 1 gallon capacity each securely closed and cushioned with incombustible absorbent material.

(2) Spec. 17H or 37A (§ 78.118 or § 78.131 of this chapter). Metal drums (single-trip), with glass inside containers not over 1 gallon capacity each securely closed and cushioned with incombustible absorbent material.

(3) Spec. 5A (§ 78.81 of this chapter). Metal drums not over 55 gallons capacity.

(4) Spec. 5F (§ 78.85 of this chapter). Metal drums not over 11 gallons capacity.

(5) Spec. 5, 5B, 5C, and 17E single-trip (§§ 78.80, 78.82, 78.83 and 78.116 of this chapter). Metal drums. These containers not authorized for shipments by rail express.

(6) Specification cylinders as prescribed for any compressed gas, except acetylene.

(7) Spec. 103–W, 103A,[1] 103A–W, 105A100,[1] 105A100–W, 111A60–F–1, 111A60–W–1, 111A100–F–2, 111A100–W–2, or 111A100–W–4 (§§ 79.100, 79.101, 79.200, 79.201 of this chapter). Tank cars.

(8) Spec. MC310 or MC311 (§ 78.330 or § 78.331 of this chapter). Tank motor vehicles of steel or stainless steel construction.

**§ 73.281 Benzyl bromide (bromotoluene, alpha).**

(a) Benzyl bromide (bromotoluene, alpha) must be packed in specification containers as follows:

(1) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Wooden boxes, with inside containers which must be glass bottles, not over 5 pints capacity each, closed by means of screw caps which are resistant to action of the contents; bottles must be packed in metal cans having slip-on or friction closure; cans must be cushioned in outside boxes with incombustible material.

[1] Use of existing tank cars authorized, but new construction not authorized.

**§ 73.282 Isopropyl percarbonate, stabilized.**

(a) Isopropyl percarbonate, stabilized, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or § 78.190 of this chapter). Wooden boxes with glass or earthenware inside containers of not over 2 gallons capacity each which must be maintained at a temperature below 75° F. Shipments are authorized for transportation by private or contract carrier by motor vehicle only.

**§ 73.283 Bromine trifluoride.**

(a) Bromine trifluoride must be packed in specification containers as follows:

(1) Spec. 3A150, 3AA150, 3E1800, 3B240 or 4B240 (§§ 78.36, 78.37, 78.42, 78.38, or 78.50 of this chapter). Cylinders.

**§ 73.284 Bromine pentafluoride.**

(a) Bromine pentafluoride, when offered for transportation by carriers by rail freight, highway, or water, must be packed in specification containers as follows:

(1) Spec. 3A150, 3AA150, 3E1800, or 4B240 (§§ 78.36, 78.37, 78.42, or 78.50 of this chapter). Cylinders not over 120 pounds water capacity (nominal), filled to not over 210 percent of water capacity. Cylinders must be plugged and fitted with valve protection caps. Spec. 3E1800 cylinders must be packed in strong outside wooden boxes and contain not more than one pound of bromine pentafluoride.

(b) Bromine pentafluoride, when offered for transportation by rail express must be packed in specification containers as follows:

(1) Spec. 3A150, 3AA150, 3E1800, or 4B240 (§§ 78.36, 78.37, 78.42, or 78.50 of this chapter). Cylinders containing not more than one pound of bromine pentafluoride. Cylinders must be plugged and fitted with valve protection caps and must be packed in strong outside wooden boxes.

**§ 73.285 Chlorine trifluoride.**

(a) Chlorine trifluoride must be packed in specification containers as follows:

(1) Spec. 3A150, 3AA150, 3E1800, 3B240, 4B240, or 4BA240 (§§ 78.36, 78.37, 78.42, 78.38, 78.50, or 78.51 of this chapter), cylinders.

(2) Not more than 10 pounds of chlorine trifluoride may, in addition to the provisions of subparagraph (1) of this paragraph, be packed in cylinders equal to or of greater efficiency than those prescribed in subparagraph (1) of this paragraph when approved by the Bureau of Explosives.

(3) Spec. 106A500,[1] 106A500–X or 110A500–W (§§ 79.300, 79.301 of this chapter). Tank cars equipped with solid steel plugs in lieu of fusible plug safety devices and valve protection caps.

**§ 73.286 Chemical kits.**

(a) Chemical kits, except as otherwise provided in Parts 71–78 of this chapter, must be packed, marked and labeled as prescribed by this part for the specific

acids or corrosive liquids contained therein.

(b) Chemical kits containing acids in inside containers not exceeding 6 fluid ounces capacity each and complying with all of the following requirements, are exempt from specification packaging, marking other than name of contents, and labeling requirements. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817 and Part 197 of this chapter.

(1) The kit must not contain any of the items named in § 73.244 (c).

(2) The kit must be a strong wooden or metal container, or must be packed in a strong wooden or metal container.

(3) The acids or corrosive liquids must be cushioned with sufficient absorbent cushioning material to completely absorb the contents of the individual containers, and must be protected from injury by other materials in the kit.

(4) The contents of the kit must be of such nature and/or so packed that there will be no possibility of the mixture of contents causing dangerous evolution of heat or gas.

(c) Chemical kits containing acids or corrosive liquids and other chemicals not classed as dangerous articles used for photographic processing, except as otherwise provided for in Parts 71–78 of this chapter, must be packed in specification containers as follows:

(1) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 32 ounces capacity each, securely cushioned and separated from other inside containers. The contents of the kit must be of such nature and so packed that there will be no possibility of the mixture of contents causing dangerous evolution of heat or gas. Shipper must have established that the completed package meets test requirements prescribed by § 78.210–10 of this chapter.

**§ 73.287 Chromic acid solution.**

(a) Chromic acid solution must be packed in specification containers as follows:

(1) In containers prescribed in § 73.245.

(2) Spec. 17H (§ 78.118 of this chapter). Metal drums (single-trip), not over 5 gallons capacity.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with one inside glass container of capacity not over 4 fluid ounces, packed in a wax-lined cylindrical fiber carton with metal ends; bottle must have ground glass stopper securely held in position by a piece of cloth tied with wire and dipped in paraffin; space between bottle and the inner surface of the fiber cylinder must be filled with closely packed asbestos in sufficient quantity to completely absorb contents of bottle in the event of breakage. Use of this container will be permitted because of the present emergency and until further order of the Commission.

(4) Spec. 29 (§ 78.226 of this chapter). Mailing tubes, with polyethylene bottles not over 1 quart capacity each.

(5) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside polyethylene containers having minimum wall thickness of 0.015 inch and so designed as to maintain their configuration when standing empty and open (see § 78.205–34 of this chapter). Not more than one inside container shall be packed in one outside box.

**§ 73.288 Allyl chloroformate, benzyl chloroformate, ethyl chloroformate, and methyl chloroformate.**

(a) Allyl chloroformate, benzyl chloroformate, ethyl chloroformate, and methyl chloroformate must be packed in specification containers as follows:

(1) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Wooden boxes with glass inside containers not over 1 pint each, cushioned with incombustible mineral material.

(2) Spec. 1A (§ 78.1 of this chapter). Boxed carboys. Glass bottles having nominal capacity of 3 gallons also authorized when packed and tested in accordance with requirements of spec. 1A (§ 78.1 of this chapter); necks must be protected during shipment.

(b) Allyl chloroformate may, in addition, be packed in specification 5H (§ 78.87 of this chapter) lead-lined metal drums not over 55 gallons capacity.

(c) Spec. 16D (§ 78.187 of this chapter). Wooden wirebound overwrap having one inside spec. 2SL (§ 78.35a of this chapter) polyethylene container not over 55 gallons capacity. Authorized for ethyl chloroformate or methyl chloroformate only.

**§ 73.289 Formic acid and formic acid solutions.**

(a) Formic acid and formic acid solutions must be packed in specification containers as follows:

(1) In containers prescribed in § 73.245, except spec. 5A, 17C, 17E or 17F (§§78.81, 78.115, 78.116 or 78.117 of this chapter). Metal barrels or drums.

(2) Spec. 103C–W or 103E–W (§ 78.283 or § 78.298 of this chapter). Tank cars. Spec. 103E–W tanks must be of Type 316 stainless steel and must be stenciled "FOR FORMIC ACID ONLY."

(3) Spec. 10A (§ 78.155 of this chapter). Wooden barrels or kegs, lined with latex rubber.

(4) Spec. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter). Tank motor vehicles.

(5) Spec. 5C (§ 78.83 of this chapter). Metal barrels or drums.

(6) Spec. 5 (§ 78.80 of this chapter). Metal barrels or drums of stainless steel only, with flanges for closures welded in place and having no opening exceeding 2.3 inches in diameter.

(7) Spec. 17H (§ 78.118 of this chapter). Metal drums (single-trip) equipped with bag type liners of material and construction approved by the Bureau of Explosives. Each drum must have two diametrically opposite vent holes ¼ inch diameter in the side wall at each end in close proximity to the top curl and bottom chime. Interior of welded side seam must be covered or otherwise treated to provide a non-abrasive surface.

(8) Spec. 60 (§ 78.255 of this chapter). Portable tanks, marked "FOR FORMIC ACID ONLY".

(9) Spec. 1EX (§ 78.6 of this chapter). Carboys in plywood drums.

(10) Spec. 1H (§ 78.13 of this chapter). Metal crate with inside polyethylene carboy.

**§ 73.290 Mixtures of hydrofluoric and sulfuric acid.**

(a) Mixtures of hydrofluoric acid and sulfuric acid, containing not more than 80 percent by weight and not less than 70 percent by weight of hydrofluoric acid and sulfuric acid combined, with the hydrofluoric acid content not less than 25 percent by weight in any case, must be packed in specification containers as follows:

(1) Spec. 5A (§ 78.81 of this chapter). Unlined metal barrels or drums which have been subjected to an adequate passivation or neutralization process (see Note 1). Containers must be filled to not over 80 percent of capacity at 68° F. If containers are washed out with water, they must be repassivated before shipment.

NOTE 1: Each metal container, before being put into this service, must be passivated by the following or an equally efficient method: By filling drum to 90 percent of capacity with hydrofluoric acid of 58 percent strength and allowing drum to stand 48 hours at a temperature of 80° F., and then 7 hours at 140° F., the internal pressure maintained at atmospheric pressure by means of a ventilated bung.

(2) Containers not exceeding 55 gallons capacity each are authorized for carload, truckload, less-than-carload, and less-than-truckload shipment. Containers exceeding 55 gallons capacity each are authorized for carload or truckload shipments only but they must be loaded by consignor and unloaded by consignee.

(3) For less-than-carload or less-than-truckload shipments, containers must be of metal at least as heavy as 14 gauge United States standard for not over 20 gallons capacity each or 12 gauge for not over 55 gallons capacity each. Each container must be subjected to at least one of the following tests before shipment: By interior pressure of at least 15 pounds per square inch before filling or by holding for inspection for at least 24 hours after filling. In either case, each container must be vented prior to shipment.

**§ 73.291 Flame retardant compound liquid.**

(a) Flame retardant compound, liquid, must be packed in specification containers as follows:

(1) Spec. 1A, 1B, or 1C (§§ 78.1, 78.2, or 78.3 of this chapter). Carboys in boxes or kegs which must be closed, and when reused must be reconditioned and tested, as provided in the specification.

(2) Spec. 1D, or 1E (§ 78.4, or § 78.7 of this chapter). Glass carboys in boxes or plywood drums of not over 6.5 gallons nominal capacity. Means shall be provided so that accumulated pressure in bottle shall not exceed 10 pounds per square inch gauge at 130° F., or shall vent at a pressure not to exceed 10 pounds per square inch gauge.

(3) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous terri-

tories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(4) Spec. 10A (§ 78.155 of this chapter). Wooden barrels or kegs, lined with asphalt or rubber.

(5) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs with inside containers which must be glass or earthenware, not over 2 gallons each.

(6) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside containers which must be glass or earthenware, not over 1 gallon each, except that inside containers up to 3 gallons are authorized when only one is packed in each outside container.

(7) Spec. 28 (§78.8 of this chapter). Metal-jacketed lead carboys.

(8) Spec. 103B,[1] 103B–W, or 111A100–W–5 (§§ 79.200, 79.201 of this chapter). Tank cars.

**§ 73.292 Hexamethylene diamine solution.**

(a) Hexamethylene diamine solution must be packed in specification containers as follows:

(1) In containers prescribed in § 73.249.

(2) Spec. MC 300, MC 301,[2] MC 302, MC 303, MC 304, MC 305, MC 310, or MC 311 (§ 78.321, 78.323, 78.324, 78.325, 78.326, 78.330, or 78.331 of this chapter). Tank motor vehicles.

**§ 73.293 Iodine monochloride.**

(a) Iodine monochloride must be packed in specification containers as follows:

(1) Spec. 15A or 15B (§ 78.168 or § 78.169 of this chapter). Wooden boxes with inside containers not over 1 quart capacity each; or with stone or earthenware jugs not over 1 gallon capacity each.

(b) Outage (vacant space above liquid) for inside containers must be not less than 15 percent.

(c) Inside containers must be securely closed by hermetical sealing or by glass or stone stoppers ground to fit and securely fastened or by screw caps fitted with gaskets of suitable material resistant to the contents.

(d) Inside containers must be securely cushioned on all sides with incombustible cushioning material which will not produce heat when in contact with iodine monochloride.

**§ 73.294 Monochloroacetic acid, liquid.**

(a) Monochloroacetic acid, liquid, must be packed in specification containers as follows:

(1) In containers prescribed in § 73.245 (a) (1), (2), (3), (6), or (7).

(2) Spec. 103A–N–W, 103A–W, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars. Spec. 103A–W, 111A100–F–2, or 111A100–W–2 tank cars must be nickel clad at least 20 percent.

(3) Spec. MC 310 or MC 311 (§ 78.330 or 78.331 of this chapter). Tank motor vehicles. Tanks to be fabricated from 99 percent pure nickel plates, Type 304 or 316 stainless steel, or be suitably lined.

(b) Monochloroacetic acid, anhydrous, when shipped as a liquid must be shipped in spec. 103A–W (§§ 79.200 and 79.201 of this chapter) tank cars with suitable corrosion resistant coatings or linings.

**§ 73.295 Benzyl chloride.**

(a) Benzyl chloride must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185 or 78.190 of this chapter). Wooden boxes with glass or earthenware inside containers not over 1 gallon each, except that inside containers up to 3 gallons each are authorized when only one is packed in an outside container.

(2) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs, with glass or earthenware inside containers not over 2 gallons each.

(3) Spec. 1A, 1C, 1D or 1E (§§ 78.1, 78.3, 78.4 or 78.7 of this chapter). Glass carboys in boxes, kegs or plywood drums.

(4) Spec. 1X (§ 78.5 of this chapter). Boxed carboys; single-trip for export only. For shipment by common carriers by water to noncontiguous territories or possessions of the United States and foreign countries; shipments from inland points in the United States which are consigned to such destinations are authorized to be transported to ship side by rail freight in carload lots only and by motor vehicle in truckload lots only.

(5) Spec. 5A or 17C (single-trip) (§§ 78.81 or 78.115 of this chapter). Metal barrels or drums with openings not exceeding 2.3 inches in diameter. Authorized for stabilized benzyl chloride only.

(6) Spec. 5K (§ 78.88 of this chapter). Nickel drums. When shipped in unstabilized condition, the lading must be anhydrous and must be free from impurities such as iron.

(7) Spec. 5H (§ 78.87 of this chapter). Metal barrels or drums, lead-lined.

(8) Spec. 60 (§ 78.255 of this chapter). Portable tanks. Benzyl chloride must be stabilized when loaded in unlined tanks.

(9) Spec. MC 310 or MC 311 (§§ 78.330 or 78.331 of this chapter). Tank motor vehicles. Authorized for stabilized benzyl chloride only.

(10) Spec. MC 310 or MC 311 (§§ 78.330 or 78.331 of this chapter). Tank motor vehicles fabricated from 99 percent pure nickel plates. All cast metal parts of the tank in contact with the lading must have a minimum nickel content of 96.7 percent. When shipped in unstabilized condition, the lading must be anhydrous and must be free from impurities such

(11) Spec. 103A,[1] 103A–W, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars which may be 10 percent nickel clad. Authorized for stabilized benzyl chloride only.

(12) Spec. 103A–N–W (§ 78.299 of this chapter). Tank cars. When shipped in unstabilized condition, the lading must be anhydrous and must be free from impurities such as iron. All cast metal parts of the tank in contact with the lading must have a minimum nickel content of approximately 96.7 percent.

**§ 73.296 Di iso octyl acid phosphate.**

(a) Di iso octyl acid phosphate must be packed in specification containers as follows:

(1) Spec. 17E (§ 78.116 of this chapter). Metal drums (single-trip) with openings not exceeding 2.3 inches in diameter.

(2) Spec. MC 310 or MC 311 (§ 78.330 or § 78.331 of this chapter). Tank motor vehicles.

(3) Spec. 103A–W, 103C–W, 103E–W, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars.

**§ 73.297 Titanium sulfate solution containing not more than 45% sulfuric acid.**

(a) Titanium sulfate solution containing not more than 45% sulfuric acid must be packed in specification containers as follows:

(1) Spec. MC 310 or MC 311 (§ 78.330 or § 78.331 of this chapter). Tank motor vehicles, rubber-lined.

(2) Spec. 103B,[1] 103B–W, or 111A100–W–5 (§§ 79.200, 79.201 of this chapter). Tank cars.

(3) Spec. 15A, 15B, 15C, 16A or 19A (§§ 78.168, 78.169, 78.170, 78.185 or § 78.190 of this chapter). Wooden boxes with inside glass or earthenware containers, not over 1 gallon capacity each.

**§ 73.298 Memtetrahydro phthalic anhydride.**

(a) Memtetrahydro phthalic anhydride must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A or 19A (§§ 78.168, 78.169, 78.170, 78.185 or § 78.190 of this chapter). Wooden boxes with inside glass containers not over 1-gallon capacity each.

(2) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 1-gallon capacity each. Not more than 4 inside glass bottles exceeding 5 pints capacity each shall be packed in the outside container. Shipper must have established that the completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(3) Spec. 17E (§ 78.116 of this chapter). Metal drums (single-trip) with openings not exceeding 2.3 inches in diameter.

(4) Spec. 37P (§ 78.133 of this chapter). Steel drums with polyethylene liner (nonreusable container). Authorized only for materials that will not react with polyethylene and result in container failure.

**§ 73.299 Etching acid liquid, n.o.s.**

(a) Etching acid liquid shall be a mixture of nitric acid, hydrofluoric acid, having nitric acid in concentrations of not more than 60 percent by weight, hydrofluoric acid in concentrations of not less than 4 percent by weight and water not less than 24 percent by weight, and may contain acetic acid. These mixtures

[1] Use of existing tank cars authorized, but new construction not authorized.

[2] Use of existing cargo tanks authorized, but new construction not authorized.

must be packed in specification containers as follows:

(1) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside polyethylene bottles having minimum wall thickness of .050 inch and screw-cap closures. Net weight in inside containers shall not be over 10 pounds each and net weight in outside containers shall not be more than 40 pounds.

(2) Spec. 37M (§ 78.134 of this chapter). Cylindrical steel overpack with inside spec. 2S or 2SL (§ 78.35 or 78.35a of this chapter) polyethylene container not over 30 gallons capacity.

(b) All outside shipping containers must be plainly marked "NONREUSABLE CONTAINER." All components of the package must not be reused.

### § 73.299a Tris-(1-aziridinyl) phosphine oxide.

(a) Tris-(1-aziridinyl) phosphine oxide must be packed in specification containers as follows:

(1) In containers as prescribed in § 73.245, not over 5 gallons capacity each.

## Subpart F—Compressed Gases; Definition and Preparation

### § 73.300 Definitions.

For the purpose of Parts 71–78 of this chapter, the following terminology is defined:

(a) *Compressed gas.* The term "compressed gas" shall designate any material or mixture having in the container an absolute pressure exceeding 40 psi at 70° F. or, regardless of the pressure at 70° F., having an absolute pressure exceeding 104 psi at 130° F.; or any liquid flammable material having a vapor pressure exceeding 40 psi absolute at 100° F. as determined by the Reid method covered by the American Society for Testing Materials Method of Test for Vapor Pressure of Petroleum Products. (D–323)

(b) *Flammable compressed gas.* Any compressed gas as defined in paragraph (a) of this section shall be classified as "flammable compressed gas" if any one of the following occurs:

(1) Either a mixture of 13 percent or less (by volume) with air forms a flammable mixture or the flammable range with air is wider than 12 percent regardless of the lower limit. These limits shall be determined at atmospheric temperature and pressure. The method of sampling and test procedure shall be acceptable to the Bureau of Explosives.

(2) Using the Bureau of Explosives' Flame Projection Apparatus (see Note 1), the flame projects more than 18 inches beyond the ignition source with valve opened fully, or, the flame flashes back and burns at the valve with any degree of valve opening.

(3) Using the Bureau of Explosives' Open Drum Apparatus (see Note 1), there is any significant propagation of flame away from the ignition source.

(4) Using the Bureau of Explosives' Closed Drum Apparatus (see Note 1), there is any explosion of the vapor-air mixture in the drum.

NOTE 1: A description of the Bureau of Explosives' Flame Projection Apparatus, Open Drum Apparatus, Closed Drum Apparatus, and method of tests may be procured from the Bureau of Explosives, 63 Vesey Street, New York 7, N.Y.

(c) *Non-liquefied compressed gas.* A "non-liquefied compressed gas" is a gas, other than gas in solution, which under the charged pressure is entirely gaseous at a temperature of 70° F.

(d) *Liquefied compressed gas.* A "liquefied compressed gas" is a gas which, under the charged pressure, is partially liquid at a temperature of 70° F.

e) *Compressed gas in solution.* A "compressed gas in solution" is a non-liquefied compressed gas which is dissolved in a solvent.

(f) *Flammable range.* The term "flammable range" shall designate the difference between the minimum and maximum volume percentages of the material in air that forms a flammable compressed gas.

(g) *Filling density.* The term "filling density" shall designate the percent ratio of the weight of gas in a container to the weight of water that the container will hold at 60° F. (One pound of water equals 27.737 cubic inches at 60° F.) For example, for a liquified petroleum gas of 0.504/0.510 specific gravity, a 100-pound cylinder holds 238.1 pounds of water and the filling density is 42 percent; therefore the amount of gas permitted is 0.42×238.1 or 100 pounds.

(h) *Service pressure.* The term "service pressure" shall designate the authorized pressure marking on the container. For example, for cylinders marked "ICC–3A1800", the service pressure is 1800 psig (pounds per square inch gauge).

### § 73.301 General requirements for shipment of compressed gases in cylinders.[1]

(a) *Gases capable of combining chemically.* No container shall contain gases or materials that are capable of combining chemically so as to endanger its serviceability.

(b) *Ownership of container.* A container charged with a compressed gas must not be shipped unless it was charged by or with the consent of the owner of the container.

(c) *Retest of container.* A container for which prescribed periodic retest has become due must not be charged and shipped until such retest has been properly made.

(d) *Manifolding containers in transportation.* No means of interconnecting such as manifolding of individual containers may be employed for the transportation of compressed gases, except as hereinafter authorized. Containers so manifolded shall be supported and held together as a unit by structurally adequate means. Safety relief devices on manifolded horizontal containers charged with flammable compressed gas shall be arranged to discharge upward and unobstructed to the open air in such a manner as to prevent any impingement of escaping gas upon the containers.

[1] Requirements covering cylinders are also applicable to spherical pressure vessels.

(1) Manifolding is authorized for containers of the following gases: Argon, air, helium, nitrogen, oxygen, carbon dioxide, nitrous oxide, provided that each such container is individually equipped with approved safety relief devices as required by § 73.34(d) or § 73.315(i).

(2) Manifolding is authorized for containers of the following gases: Boron trifluoride, ethylene (nonliquefied), hydrogen, hydrocarbon gases (nonliquefied), methane, provided individual containers are equipped with approved safety relief devices as required by § 73.34(d) or § 73.315(i), and further provided that each container is equipped with individual shutoff valve, or valves, which shall be tightly closed while in transit. Manifold branch lines to these individual shutoff valves shall be sufficiently flexible to prevent injury to the valves which otherwise might result from the use of rigid branch lines. A temperature measuring device may be inserted in one container of a manifolded installation in place of the shutoff valve.

(3) Manifolding is authorized for containers of the following gases: Ethane, ethylene, propylene, liquefied petroleum gases, liquefied hydrocarbon gases, provided individual containers are equipped with approved safety relief devices as required by § 73.34(d) or § 73.315(i), and further provided that each container is equipped with individual shutoff valve, or valves, which shall be tightly closed while in transit, and that each such container must be separately charged and means shall be provided to insure that no interchange of container contents can occur during transportation. Manifold branch lines to individual shutoff valves shall be sufficiently flexible to prevent injury to the valves which otherwise might result from the use of rigid branch lines.

(4) Manifolding is authorized for containers of acetylene, provided that each container is individually equipped with approved safety relief devices as required by § 73.34(d), and further provided that each container is equipped with an individual shutoff valve, or valves, which shall be tightly closed while in transit. Manifold branch lines to these individual shutoff valves shall be sufficiently flexible to prevent injury to the valves which otherwise might result from the use of rigid branch lines. All manifold containers shall be transported in a vertical position. For the checking of tare weights or for replacement of solvent the container shall be removed from the manifold. This requirement is not intended to prohibit the charging of the acetylene cylinders while manifolded.

(e) *Container pressure.* The pressure in the container at 70° F. must not exceed the service pressure for which the container is marked or designated, except as provided in § 73.302(c).

NOTE 1: In certain cases with liquefied gases the pressure at 70° F. must be lower than the marked service pressure to avoid having a greater pressure at a temperature of 130° F. than is permitted.

(1) For authorized containers not marked with a service pressure, the service pressure is designated as follows:

| Specification marking | Service pressure—psig |
|---|---|
| ICC-3 | 1,800 |
| 3E | 1,800 |
| 4 | 300 |
| 8 | 250 |
| 9 | 200 |
| 25 | 300 |
| 26 | 480 |
| 33 | 250 |
| 40 | 200 |
| 41 | 240 |

(2) For containers made prior to the effective date of specifications, the service pressure is designated as the same as for the same type of container made in accordance with current specifications.

(f) *Container pressure at 130° F.* The pressure in the container at 130° F. shall not exceed 5/4 times the service pressure, except:

(1) Containers charged with acetylene, liquefied nitrous oxide and liquefied carbon dioxide.

(2) When a cylinder is charged in accordance with § 73.302(c), the pressure in the cylinder at 130° F. must not exceed 5/4 times the filling pressure authorized therein.

(g) *Container valve protection.* Containers charged with flammable, corrosive, or noxious gases, must have their valves protected by one of the following methods.

(1) By equipping the containers with securely attached metal caps of sufficient strength to protect the valves from injury during transit.

(2) By boxing or crating the containers so as to give proper protection to the valves.

(3) By so constructing the containers that the valve is recessed into the container or otherwise protected so that it will not be subjected to a blow when the container is dropped on a flat surface.

(4) By loading the containers compactly in an upright position and securely bracing in cars or motor vehicles, when loaded by the consignor and to be unloaded by the consignee.

(5) By equipping with valves strong enough to avoid injury during transit for containers containing non-liquefied gas under pressure not exceeding 300 psi at 70° F.

(h) *Compressed gas containers.* Compressed gases must be in metal containers built in accordance with the ICC specifications, as shown below, in effect at the time of manufacture, and marked as required by the specification and the regulation for retesting if applicable;

CONTAINERS

| | | | |
|---|---|---|---|
| ICC-2P | ICC-3E | ICC-4C | ICC-8AL. |
| 3[1] | 3HT | 4D | 9. |
| 3A | 4 | 4DA | 25[1]. |
| 3A480X | 4A | 4DS | 26[1]. |
| 3AA | 4AA | 4E | 33[1]. |
| 3B | 4B | 4L | 38[1]. |
| 3BN | 4B240FLW | 5 | 40. |
| 3C | 4B240X | 5F | 41. |
| 3D | 4BA | 7[1] | |
| | 4B240ET | 8 | |

[1] Use of existing cylinders authorized, but new construction not authorized.

(i) *Foreign containers in domestic use.* Except as authorized by § 73.9, a charged container of foreign manufacture must not be offered for transportation in domestic traffic unless it has been made in accordance with the applicable ICC specification and unless the tests required by such specification were made in this country and proper report rendered.

(j) *Charging of foreign containers for export.* Containers of foreign manufacture, received from foreign countries for charging with compressed gas, may be charged and shipped for export only.

(1) Provided that they are retested in accordance with § 73.34(e). This retest may be omitted only if the container can be definitely identified as having been retested under this provision within the prescribed retest period, and

(2) Provided further that the maximum filling density and service pressure for each container shall be in accordance with all packing requirements of this part for the compressed gas involved.

(3) Records showing the results of the tests made on all foreign containers must be preserved for inspection until the next scheduled retest date.

(4) Bill of lading or other shipping paper shall, when possible, identify the containers and shall carry the following certification: "These containers have been retested and refilled in accordance with the ICC requirements for export."

## § 73.302 Charging of cylinders with non-liquefied compressed gases.

(a) *Detailed requirements.* Nonliquefied compressed gases (except gas in solution or poisonous gas) for which charging requirements are not definitely prescribed in § 73.304(a)(2) must be shipped, subject to § 73.301, and § 73.305 in specification containers as follows:

(1) Spec. 3,[1] 3A, 3AA, 3B, 3C, 3D, 3E, 4, 4A, 4B, 4BA, 4C, 7,[1] 25,[1] 26,[1] 33,[1] or 38[1] (§ 78.36, § 78.37, § 78.38, § 78.40, § 78.41, § 78.42, § 78.48, § 78.49, § 78.50, § 78.51, or § 78.52 of this chapter). (See §§ 73.34 and 73.301(e).)

NOTE 1: Authorized cylinders containing oxygen which is continuously fed to tanks containing live fish may be shipped irrespective of the provisions of § 73.24.

(2) Spec. 3HT (§ 78.44 of this chapter) cylinders are authorized for nonflammable gases, for use in aircraft only, for a maximum service life of 12 years, and must be equipped with safety relief devices as required by § 73.34(d). Only a frangible disc safety relief device, without fusible metal backing, shall be used with spec. ICC-3HT cylinders and the rated bursting pressure of the disc shall not exceed 90 percent of the minimum required test pressure of the cylinder with which the device is used. Cylinders must be shipped in strong outside containers.

[1] Use of existing cylinders authorized, but new construction not authorized.

(b) *Filling limits.* (See § 73.301(e).)

(c) *Special filling limits for spec. 3A and 3AA cylinders.* Specs. 3A and 3AA (§§ 78.36 and 78.37 of this chapter) cylinders may be charged with compressed gases, other than liquefied, dissolved, poisonous, or flammable gases to a pressure 10 percent in excess of their marked service pressure, provided:

(1) That such cylinders are equipped with frangible disc safety relief devices (without fusible metal backing) having a bursting pressure not exceeding the minimum prescribed test pressure.

(2) That the elastic expansion shall have been determined at the time of the last test or retest by the water jacket method.

(3) That either the average wall stress or the maximum wall stress shall not exceed the wall stress limitation shown in the following table (see Notes 1 and 2):

| Type of steel | Average wall stress limitation | Maximum wall stress limitation |
|---|---|---|
| Plain carbon steels over 0.35 carbon and medium manganese steels | 53,000 | 58,000 |
| Steels of analysis and heat-treatment specified in spec. 3AA | 67,000 | 73,000 |
| Plain carbon steels less than 0.35 carbon made prior to 1920 | 45,000 | 45,000 |

NOTE 1: The average wall stress shall be computed from the elastic expansion data using the following formula:

$$S=\frac{1.7EE}{KV}-0.4P$$

where—

$S$=wall stress, pounds per square inch;
$EE$=elastic expansion (total less permanent) in cubic centimeters;
$K$=factor x $10^{-7}$ experimentally determined for the particular type of cylinder being tested;
$V$=internal volume in cubic centimeter (1 cubic inch=16.387 cubic centimeters);
$P$=test pressure, pounds per square inch.

Formula derived from formula of Note 2 and the following:

$$EE=PKV\times\frac{D^2}{D^2-d^2}$$

NOTE 2: The maximum wall stress shall be computed from the formula:

$$S=P\frac{(1.3D^2+0.4d^2)}{D^2-d^2}$$

where—

$S$=wall stress, pounds per square inch;
$P$=test pressure, pounds per square inch;
$D$=outside diameter, inches;
$d=D-2t$, where $t$=minimum wall thickness determined by a suitable method.

(4) That an external and internal visual examination made at the time of test or retest shows the cylinder to be free from excessive corrosion, pitting, or dangerous defects.

(5) That a plus sign (+) be added following the test date marking on the cylinder to indicate compliance with subparagraphs (2), (3), and (4) of this paragraph.

(d) *Fluorine.* Fluorine must be shipped in Specification 3A1000, 3AA1000, or 3BN400 (§ 78.36, § 78.37 or § 78.39 of this chapter) cylinders without safety relief device and equipped with valve protection cap. Such containers must not be charged to over 400 psig at 70° F. and must not contain over 6 pounds of gas.

(e) *Verification of container pressure.* (1) Each day, the pressure in a con-

tainer representative of that day's compression must be checked by the charging plant after the container has cooled to a settled temperature and a record of this test kept for at least 30 days.

**§ 73.303 Charging of cylinders with compressed gas in solution (acetylene).**

(a) *Cylinder, filler and solvent requirements.* (Refer to applicable parts of Specs. ICC–8 and ICC–8AL.) Acetylene gas must be shipped in cylinders, spec. 8 or 8AL (§ 78.59 or § 78.60 of this chapter). The cylinders shall consist of metal shells filled with a porous material that has been tested with satisfactory results by the Bureau of Explosives, and this material must be charged with a suitable solvent.

(1) The specific gravity of acetone solvent in acetylene cylinders must be 0.796 or over at 15.5° C. (59.9° F.).

(2) The amount of solvent added in the refilling operation must not cause the tare weight of the cylinder to exceed its marked tare weight. The tare weight includes the weight of the cylinder shell, porous filling, valve, safety relief devices and solvent, but without removable cap.

(b) *Filling limits.* The pressure in cylinders containing acetylene gas must not exceed 250 psi at 70° F., and in case the cylinders are marked for a lower allowable charging pressure, at 70° F., then that pressure must not be exceeded.

(c) *Data requirements on filler and* gas must not be shipped unless they were *solvent.* Cylinders containing acetylene charged by or with the consent of the owner, and by a person, firm, or company having possession of complete information as to the nature of the porous filling, the kind and quantity of solvent in the cylinders, and the meaning of such markings on the cylinders as are prescribed by the Commission's regulations and specifications applying to containers for the transportation of acetylene gas.

(d) *Verification of container pressure.* (1) Each day, the pressure in a container representative of that day's compression must be checked by the charging plant after the container has cooled to a settled temperature and a record of this test kept for at least 30 days.

**§ 73.304 Charging of cylinders with liquefied compressed gas.**

(a) *Detailed charging requirements.* Liquefied gases shall be charged in accordance with the specific provisions of subparagraph (2) of this paragraph or paragraph (e) of this section. Where charging requirements are not specifically prescribed, liquefied gases, except gas in solution or poisonous gas, must be shipped, subject to the applicable paragraphs under General Requirements for Shipment (see § 73.301), the charging requirements of this section for liquefied compressed gas, or the charging requirements for mixtures (see § 73.305), in containers manufactured under specifications, as follows:

[1] Use of existing cylinders authorized, but new construction not authorized.

(1) Spec. 3,[1] 3A, 3AA, 3B, 3BN, 3D, 3E, 4, 4A, 4B, 4BA, 4B–ET, 9, 25,[1] 26,[1] 38,[1] 40 or 41 (§§ 78.36, 78.37, 78.38, 78.39, 78.41, 78.42, 78.48, 78.49, 78.50, 78.51, 78.55, 78.63, 78.66, 78.67 of this chapter), except that specs. 9, 40, and 41 containers must not be charged and shipped with mixtures containing aluminum triethyl, aluminum trimethyl, carbon bisulphide (disulphide), ethyl chloride, ethylene oxide, nickel carbonyl, spirits of nitroglycerin, zinc ethyl or poisonous materials, class A, B or C, as defined by these regulations, unless specifically prescribed in this part. (See §§ 73.34 and 73.301 (e).)

(2) The following restrictions must be complied with for the gases named:

| Kind of gas | Maximum permitted filling density (see Note 1) | Containers marked as shown in this column or of the same type with higher service pressure must be used except as provided in §73.34 (a), (b), §73.301 (j) (see notes following table). |
|---|---|---|
| | *Percent* | |
| Anhydrous ammonia | 54 | ICC–4; ICC–3A480; ICC–3AA480; ICC–3A480X; ICC–4A480; ICC–3; ICC–4AA480; ICC–3E1800. |
| Argon, pressurized liquid | 115 | ICC–4L200. |
| Carbon dioxide, liquefied (see Notes 3, 4, and 7). | 68 | ICC–3A1800; ICC–3AA1800; ICC–3; ICC–3E1800; ICC–3HT2000. |
| Carbon dioxide-nitrous oxide mixture (see Note 7). | 68 | ICC–3A1800; ICC–3AA1800; ICC–3; ICC–3E1800; ICC–3HT2000. |
| Carbon monoxide | | ICC–3A1800; ICC–3AA1800; ICC–3; ICC–3E1800: The pressure in the cylinder must not exceed 1,000 pounds per square inch at 70° F. |
| Chlorine (see Note 2) | 125 | ICC–3A480; ICC–3AA480; ICC–25; ICC–3; ICC–3BN480; ICC–3E1800. |
| Cyclopropane | 55 | ICC–3A225; ICC–3A480X; ICC–3AA225; ICC–3B225; ICC–4A225; ICC–4AA480; ICC–4B225; ICC–4BA225; ICC–4B240ET; ICC–7–300; ICC–3; ICC–3E1800. |
| Dichlorodifluoromethane (see Note 8) | 119 | ICC–3A225; ICC–3AA225; ICC–3B225; ICC–4A225; ICC–4B225; ICC–4BA225; ICC–4B240ET; ICC–9; ICC–41; ICC–3E1800. |
| Dichlorodifluoromethane and difluoroethane mixture (constant boiling mixture) (see Note 8). | Not liquid full at 130° F. | ICC–3A240; ICC–3AA240; ICC–3B240; ICC–3E1800; ICC–4A240; ICC–4B240; ICC–4BA240; ICC–9. |
| Difluoroethane | 79 | ICC–3A150; ICC–3AA150; ICC–3B150; ICC–4B150; ICC–4BA225; ICC–3E1800. |
| Difluoromonochloroethane | 100 | ICC–3A150; ICC–3AA150; ICC–3B150; ICC–4B150; ICC–4BA225; ICC–3E1800. |
| Dimethylamine, anhydrous | 59 | ICC–3A150; ICC–3AA150; ICC–3B150; ICC–4B150; ICC–4BA225; ICC–3E1800. |
| Ethane | 35.8 | ICC–3A1800; ICC–3AA1800; ICC–3; ICC–3E1800. |
| Do | 36.8 | ICC–3A2000; ICC–3AA2000. |
| Ethylene | 31.0 | ICC–3A1800; ICC–3AA1800; ICC–3; ICC–3E1800. |
| Do | 32.5 | ICC–3A2000; ICC–3AA2000. |
| Do | 35.5 | ICC–3A2400; ICC–3AA2400. |
| Hydrogen chloride | 60 | ICC–3A1800; ICC–3AA1800; ICC–3; ICC–3E1800. |
| Hydrogen sulfide | 62.5 | ICC–3A480; ICC–3AA480; ICC–3B480; ICC–4A480; ICC–4B480; ICC–4BA480; ICC–26–480; ICC–3E1800. |
| Insecticide, liquefied gas (see Note 8) | Not liquid full at 130° F. | ICC–3A300; ICC–3AA300; ICC–3B300; ICC–4B300; ICC–4BA300; ICC–9; ICC–40; ICC–41; ICC–3E1800. |
| Liquefied nonflammable gases, liquids other than those classified as flammable, corrosive, or poisonous, and mixtures or solutions thereof, charged with nitrogen, carbon dioxide, or air (see Notes 7 and 8). | Not liquid full at 130° F. | ICC–3A300; ICC–3AA300; ICC–3HT900; ICC–4B300; ICC–4BA300; ICC–4D300; ICC–4DA500; ICC–4DS500; ICC–3E1800. |
| Methyl acetylene—15% to 20% propadiene mixture (see Note 6). | 50 | ICC–3A240; ICC–3AA240; ICC–3B240; ICC–4B240; ICC–4BA240; ICC–4B240ET. |
| Methyl chloride | 84 | ICC–3A225; ICC–3AA225; ICC–3B225; ICC–4A225; ICC–4B225; ICC–4BA225; ICC–3; ICC–4; ICC–25; ICC–26–300; ICC–38; ICC–3E1800; ICC–4B240ET. Cylinders complying with ICC–3A150; ICC–3B150; ICC–4A150, and ICC–4B150 manufactured prior to Dec. 7, 1936 are also authorized. |
| Methyl mercaptan | 80 | ICC–3A240; ICC–3AA240; ICC–3B240; ICC–4B240; ICC–4B240ET; ICC–3E1800; ICC–4BA240. |
| Monochlorodifluoromethane (see Note 8). | 105 | ICC–3A240; ICC–3AA240; ICC–3B240; ICC–4B240; ICC–4BA240; ICC–4B240ET; ICC–3E1800; ICC–41. |
| Monochloropentafluoroethane | 110 | ICC–3A225; ICC–3AA225; ICC–3B225; ICC–4A225; ICC–4B225; ICC–4BA225; ICC–3E1800. |
| Monochlorotrifluoromethane | 100 | ICC–3A1800; ICC–3AA1800; ICC–3; ICC–3E1800. |
| Monomethylamine, anhydrous | 60 | ICC–3A150; ICC–3AA150; ICC–3B150; ICC–4B150; ICC–4BA225; ICC–3E1800. |
| Nitrogen, pressurized liquid | 68 | ICC–4L200. |
| Nitrosyl chloride | 110 | ICC–3BN400 only. |
| Nitrous oxide (see Notes 7 and 9) | 68 | ICC–3A1800; ICC–3AA1800; ICC–3; ICC–3E1800; ICC–3HT2000. |
| Oxygen, pressurized liquid | 96 | ICC–4L200. |
| Sulfur dioxide | 125 | ICC–3A225; ICC–3AA225; ICC–3B225; ICC–4A225; ICC–4B225; ICC–4BA225; ICC–4B240ET; ICC–3; ICC–4; ICC–25; ICC–26–150; ICC–38; ICC–3E1800. |
| Sulfur hexafluoride | 110 | ICC–3A1000; ICC–3AA1000; ICC–3; ICC–3E1800. |
| Tetrafluoroethylene, inhibited | 90 | ICC–3A1200; ICC–3AA1200; ICC–3E1800. |
| Trifluorochloromethylene | 115 | ICC–3A300; ICC–3AA300; ICC–3B300; ICC–4A300; ICC–4B300; ICC–4BA300; ICC–3E1800. |
| Trimethylamine, anhydrous | 57 | ICC–3A150; ICC–3AA150; ICC–3B150; ICC–4B150; ICC–4BA225; ICC–3E1800. |
| Vinyl chloride (see Note 5) | 84 | ICC–4B150, without brazed seams; ICC–4BA225, without brazed seams; ICC–3A150; ICC–3AA150; ICC–25; ICC–3E1800. |
| Vinyl fluoride, inhibited | 62 | ICC–3A1800; ICC–3AA1800; ICC–3E1800. |
| Vinyl methyl ether, inhibited (see Note 5). | 68 | ICC–4B150, without brazed seams; ICC–4BA225, without brazed seams; ICC–3A150; ICC–3AA150; ICC–3B150; ICC–25; ICC–3E1800. |

NOTE 1: The "filling density" is hereby defined as the percent ratio of the weight of gas in a container to the weight of water that the container will hold at 60° F. (1 lb. of water=27.737 cubic inches at 60° F.).

NOTE 2: Cylinders purchased after Oct. 1, 1944, for the transportation of chlorine must contain no aperture other than that provided in the neck of the cylinder for attachment of a valve equipped with an approved safety relief device. Cylinders purchased after Nov. 1, 1935, and charged with chlorine must not contain over 150 pounds of gas.

NOTE 3: The charge in carbon dioxide cylinders must not exceed 68 percent by weight of the water capacity of the cylinder. Cylinders rated for 75 pounds or for 100 pounds carbon dioxide capacity are the only cylinders authorized for shipment of more than 50 pounds of carbon dioxide except that cylinders of sizes not over 9 1/16 inches outside

diameter by 51 inches (approx.), charged with mixtures of carbon dioxide containing at least 6 percent by weight of other gas or liquid, are exempt from the foregoing part of this sentence.

NOTE 4: Special carbon dioxide mining devices containing a heating element and charged with not over 6 pounds of carbon dioxide may be filled to a density of not over 85 percent, provided the cylinder is made of steel with a calculated bursting pressure in excess of 39,000 psi, be fitted with a frangible disc that will operate at not over 57 percent of that pressure, and be able to withstand a drop of 10 feet when striking crosswise on a steel rail while under a pressure of at least 3,000 psi. Such devices must be shipped in strong boxes or must be wrapped in heavy burlap and bound by 12-gauge wire with the wire completely covered by friction tape. Wrapping must be applied so as not to interfere with the functioning of the frangible disc safety relief device. Shipments must be described as "liquefied carbon dioxide gas (mining device)" and marked, labeled, and certified as prescribed for liquefied carbon dioxide.

NOTE 5: All parts of valve and safety relief devices in contact with contents of cylinders must be of a metal or other material, suitably treated if necessary, which will not cause formation of any acetylides.

NOTE 6: Cylinders having a water capacity in excess of one gallon shall be insulated with three coats of heat-retardant paint, of a type approved by the Bureau of Explosives, applied over suitable primer and finished with suitable waterproof paint; or with other equally efficient insulation approved by the Bureau of Explosives.

NOTE 7: Spec. 3HT (§ 78.44 of this chapter (cylinders are authorized for use in aircraft only, for a maximum service life of 12 years, and must be equipped with safety relief devices as required by § 73.34 (d). Only frangible disc safety relief device, without fusible metal backing, shall be used with spec. 3HT cylinders and the rated bursting pressure of the disc shall not exceed 90 percent of the minimum required test pressure of the cylinder with which the device is used. Cylinders must be shipped in strong outside containers.

NOTE 8: Specs. 4D, 4DA, 4DS, 9, 40, and 41 (§ 78.53, 78.58, 78.47, 78.63, 78.66, or 78.67 of this chapter) spheres and cylinders must be shipped in strong outside containers.

NOTE 9: Filling density for nitrous oxide may be 75 percent in cylinders made previous to Feb. 1, 1917, of less than 12 pound water capacity, and if known to have passed a test pressure of not less than 3,500 psi.

(b) *Filling limits.* (See § 73.301(f).)

(1) For a liquefied compressed gas the liquid portion of the content at 130° F. must not completely fill the container.

NOTE 1: Maximum filling densities are permitted by paragraph (a)(2) of this section for certain liquefied compressed gases, having critical temperatures below 130° F. that result in the container being liquid full below the critical temperature, but because of compressibility of the liquids, the maximum pressure requirements of § 73.301(f) are met up to and including 130° F.

NOTE 2: Cylinders containing vinyl fluoride, inhibited, may be liquid full at 130° F. provided the pressure at the critical temperature does not exceed one and one-fourth times the service pressure.

(2) The pressure in ICC–4L (§ 78.57 of this chapter) cylinders must be limited by a pressure controlling valve so sized and set as to limit the pressure to one and one-fourth times the marked service pressure. The liquid portion of the gas must not completely fill the cylinder. For ICC–4L cylinders insulated by a vacuum the pressure control valve must be set at least 15 psi lower than one and one-fourth times the marked service pressure. The other paragraphs of this section do not apply to ICC–4L cylinders.

(c) *Verification of content in cylinder.* (1) Liquefied gases must be charged by weight, by volume measurement of liquid, or when lower in pressure than required for liquefaction a pressure-temperature chart may be used in charging to insure that the service pressure at 70° F. times 5/4 will not be exceeded at 130° F.

(2) Except as noted in paragraph (d)(4) of this section, the amount of liquefied gas charged into a container must be determined by weight, or if charged at a pressure lower than the liquefaction point, by pressure shown on a chart for the specific gas. Weight must be checked, after disconnecting from the charging line, by the use of proper scales.

(d) *Requirements for liquefied petroleum gas.* (1) Filling density limited as follows:

| Minimum specific gravity of the liquid material at 60° F. | Maximum filling density in percent of the water-weight capacity of the container | Minimum specific gravity of the liquid material at 60° F. | Maximum filling density in percent of the water-weight capacity of the container |
|---|---|---|---|
| 0.271–0.289 | 26 | 0.504–0.510 | 42 |
| 0.290–0.306 | 27 | 0.511–0.519 | 43 |
| 0.307–0.322 | 28 | 0.520–0.527 | 44 |
| 0.323–0.338 | 29 | 0.528–0.536 | 45 |
| 0.339–0.354 | 30 | 0.537–0.544 | 46 |
| 0.355–0.371 | 31 | 0.545–0.552 | 47 |
| 0.372–0.398 | 32 | 0.553–0.560 | 48 |
| 0.399–0.425 | 33 | 0.561–0.568 | 49 |
| 0.426–0.440 | 34 | 0.569–0.576 | 50 |
| 0.441–0.452 | 35 | 0.577–0.584 | 51 |
| 0.453–0.462 | 36 | 0.585–0.592 | 52 |
| 0.463–0.472 | 37 | 0.593–0.600 | 53 |
| 0.473–0.480 | 38 | 0.601–0.608 | 54 |
| 0.481–0.488 | 39 | 0.609–0.617 | 55 |
| 0.489–0.495 | 40 | 0.616–0.626 | 56 |
| 0.496–0.503 | 41 | 0.627–0.634 | 57 |

(2) Subject to § 73.301(f), any filling density percentage prescribed in this section is authorized to be increased by 2 for liquefied petroleum gas in spec. 26 or 3 cylinders or in spec. 3A marked for 1,800 psig, or higher, service pressure.

(3) Liquefied petroleum gas must be shipped in specification containers as follows:

(i) Spec. 3,[1] 3A, 3AA, 3B, 3E, 4A, 4B, 4BA, 4B240ET, 4B240X,[1] (see Appendix A–1 to subpart C of Part 78 of this chapter), 4B240FLW, 4E, 4, 9, 25,[1] 26,[1] 38,[1] or 41 (§ 78.36, § 78.37, § 78.38, § 78.42, § 78.49, § 78.50, § 78.51, § 78.54 or § 78.68 of this chapter). Cylinders authorized under § 73.34(a) and § 73.301(j) may be used.

NOTE 1: Cylinders marked as complying with ICC spec. 4B240FLW bearing manufacturer's symbol WCO and serial numbers 47A–1 to 47A–59200, inclusive, varying from the specification requirements as to physical properties of steel, are authorized for the transportation of liquefied petroleum gases.

(ii) Additional containers may be used within the limits of quantity and pressure as follows:

| Type of container | Maximum capacity | | Maximum charging pressure-psig |
|---|---|---|---|
| | Cubic inches | Gallons | |
| ICC–2P (see Note 1) | 31.83 | | 45 psig at 70° F. and 105 psig at 130° F. (see Note 2). |
| ICC–2P (see Note 1) | 31.83 | | 26 psig and 70° F. and 84 psig at 130° F. |
| ICC–3C and ICC–4C | 3,881 | 16 + 5% tolerance | 145 psig at 130° F. |
| ICC–7[1] made prior to Oct. 1, 1930 | 3,881 | 16 + 5% tolerance | 70 psig at 70° F. and 145 psig at 130° F. |
| ICC–7–150[1] made prior to Oct. 1, 1930, and retested as per § 73.34(e) to 300 psig. | | | 187 psig at 130° F. |
| ICC–5 drums made prior to Oct. 1, 1930 of steel at least 16-gauge U.S. Standard. | | 11 | 23 psig at 70° F. and 70 psig at 130° F. |
| ICC–5F drums | | 11 | 28 psig at 70° F. and 86 psig at 130° F. |

NOTE 1: Containers must be packed in strong wooden or fiber boxes of such design as to protect valves from injury or accidental functioning under conditions incident to transportation. Each completed container filled for shipment must have been heated until contents reached a minimum temperature of 130° F., without evidence of leakage, distortion, or other defect. Each outside shipping container must be plainly marked "INSIDE CONTAINERS COMPLY WITH PRESCRIBED SPECIFICATIONS."

[1] Use of existing cylinders authorized, but new construction not authorized.

NOTE 2: Containers must be equipped with safety relief devices which will prevent rupture of the containers and dangerous projection of the closing devices when the containers are exposed to the action of fire.

(4) Verification of content. Containers with a water capacity of 200 pounds or more and for use with a liquefied petroleum gas with a specific gravity at 60° F. or 0.504 or greater may have their contents determined by using a fixed length dip tube gauging device. The length of the dip tube shall be such that when a liquefied petroleum gas with a specific volume of 0.03051 cu. ft./lb. at a temperature of 40° F. is charged into the container it just reaches the bottom of the tube. The weight of this liquid shall not exceed 42 percent of the water capacity of the container which must be stamped thereon. The length of the dip tube, expressed in inches carried out to one decimal place and prefixed with the letters "DT" shall be stamped on the container and on the exterior of removable type dip tube; for the purpose of this requirement the marked length shall be expressed as the distance measured along the axis of a straight tube from the top of the boss through which the tube is inserted to the proper level of the liquid in the container. The length of each dip tube shall be checked when installed by weighing each container after filling except when installed in groups of substantially identical containers in which case one of each 25 containers shall be weighed. The quantity of liquefied gas in each container must be checked by means of the dip tube after disconnecting from the charging line. The outlet from the dip tube shall be not larger than a No. 54 drill size orifice. A container representative of each day's filling at each charging plant shall have its contents checked by weighing after disconnecting from the charging line.

(e) *Refrigerant gases.* Refrigerant gases which are nonpoisonous and nonflammable under this part, must be shipped in cylinders as prescribed in paragraph (a)(1) or (2) of this section, or as follows:

(1) Spec. 2P (§ 78.33 of this chapter). Inside metal containers equipped with safety devices of a type approved by the Bureau of Explosives and packed in strong wooden or fiber boxes of such design as to protect valves from injury or accidental functioning under conditions incident to transportation. Pressure in the container must not exceed 85 pounds psi absolute at 70° F. Each completed metal container filled for shipment must

[1] Use of existing cylinders authorized, but new construction not authorized.

be heated until content reaches a minimum temperature of 130° F., without evidence of leakage, distortion, or other defect. Each outside shipping container must be plainly marked "INSIDE CONTAINERS COMPLY WITH PRESCRIBED SPECIFICATION."

(f) *Engine starting fluid.* Engine starting fluid containing compressed gas or gases which are flammable under this part must be shipped in cylinders as prescribed in paragraph (a)(1) of this section, or as follows:

(1) Inside nonrefillable metal containers of capacity not exceeding 32 cubic inches. Containers must be packaged in spec. 12B (§ 78.205 of this chapter) fiberboard boxes equipped with top and bottom pads which will provide three complete thicknesses of fiberboard on tops and bottoms of boxes, or spec. 15A, 15B, or 15C (§ 78.168, § 78.169, or § 78.170 of this chapter) wooden boxes. Pressure in the container must not exceed 140 psi, absolute, at 130° F. However, if the pressure exceeds 140 psi, absolute at 130° F., a spec. 2P (§ 78.33 of this chapter) container must be used. In any event, the metal container must be capable of withstanding without bursting a pressure of one and one-half times the pressure of the content at 130° F. The liquid content of the material and gas must not completely fill the container at 130° F. Each completed container filled for shipment must have been heated until content reaches a minimum temperature of 130° F., without evidence of leakage, distortion, or other defect. Each outside shipping container must be plainly marked, "INSIDE CONTAINERS COMPLY WITH PRESCRIBED SPECIFICATIONS."

### § 73.305 Charging of cylinders with a mixture of compressed gas and other material.

(a) *Detailed requirements.* A mixture of a compressed gas and any other material must be shipped as a compressed gas if the mixture is a compressed gas as designated in § 73.300(a) and when not in violation of § 73.301(a).

(b) *Filling limits.* (See § 73.301(e).) For mixtures, the liquid portion of the liquefied compressed gas at 130° F. plus any additional liquid or solid must not completely fill the container.

(c) *Nonpoisonous and nonflammable mixtures.* Mixtures containing compressed gas or gases including insecticides, which mixtures are nonpoisonous and nonflammable under this part must be shipped in cylinders as prescribed in § 73.304(a) or as follows:

(1) Spec. 2P (§ 78.33 of this chapter). Inside metal containers equipped with safety relief devices of a type approved by the Bureau of Explosives and packed in strong wooden or fiber boxes of such design as to protect valves from injury or accidental functioning under conditions incident to transportation. Pressure in the container must not exceed 85 psi absolute at 70° F. Each completed metal container filled for shipment must be heated until content reaches a minimum temperature of 130° F., without evidence of leakage, distortion or other defect. Each outside shipping container must be plainly marked "INSIDE CONTAINERS COMPLY WITH PRESCRIBED SPECIFICATIONS."

(d) *Poisonous mixtures.* Mixtures containing any poisonous article, class A or class C, in such proportion that the mixture would be classed as poisonous under § 73.326(a) or § 73.381(a) must be shipped in containers as authorized for such poisonous articles.

### § 73.306 Exemptions from compliance with regulations for shipping compressed gas.

(a) *General exemptions.* Compressed gases, except poisonous gases as defined by § 73.326(a) and except those for which no exemptions are provided as indicated by the "No exemption" statement in § 72.5 of this chapter, when in accordance with one of the following subparagraphs are, unless otherwise provided, exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(1) When in containers of not more than 4 fluid ounces water capacity (7.22 cubic inches or less).

(2) When in metal containers filled with non-dangerous material to not over 90 percent capacity at 70° F. then charged with non-flammable, non-liquefied gas; each container must be tested to three times the gas pressure at 70° F., and, when refilled and reshipped, must be retested at this pressure before each shipment, provided one of the following conditions is met:

(i) Container is not over 1 quart capacity charged to not over 170 psig at 70° F.

(ii) Container is not over 30 gallons capacity charged to not over 75 psig pressure at 70° F.

(3) When in inside nonrefillable metal containers charged with a solution of materials and compressed gas or gases which is non-poisonous, provided all of the following conditions are met:

(i) Capacity must not exceed 32 cubic inches.

(ii) Pressure in container must not exceed 75 psi absolute at 70° F; however, if the pressure exceeds 55 psi absolute at 70° F., a specification 2P (§ 78.33 of this chapter) container must be used.

(iii) Liquid content of the material and gas must not completely fill the container at 130° F.

(iv) If the content is flammable as provided in § 73.300(b) (2), (3) and (4), the flash point, as determined by Bureau of Explosives method, must be not less than 20° F.

(v) Each completed container filled for shipment must be heated until content reaches a minimum temperature of 130° F. without evidence of leakage, distortion or other defect.

(4) When in inside nonrefillable metal containers charged with a solution of non-poisonous and non-flammable materials and non-liquefied compressed gas, provided all the following conditions are met:

(i) Capacity not to exceed 31.83 cubic inches (17.6 fluid ounces).

(ii) Pressure in container not to exceed 140 psi absolute at 130° F.

(iii) The metal container must be capable of withstanding without bursting a pressure of two times the pressure of the container at 70° F. or one and one-half times the pressure of the container at 130° F., whichever is greater.

(b) *Exemptions for foodstuffs, soap, cosmetics, beverages, biologicals, electronic tubes and audible fire alarm systems.* Compressed gases, except poisonous gases as defined by § 73.326(a) and except those for which no exemptions are provided as indicated by the "No exemption" statement in § 72.5 of this chapter, when in accordance with one of the following subparagraphs are, unless otherwise provided, exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817 and Part 197 of this chapter.

(1) Carbonated beverages.

(2) Foodstuffs or soaps in metal cans with soluble or emulsified compressed gas, provided the pressure in the container does not exceed 115 psi absolute at 70° F., or 150 psi absolute at 130° F. The metal container must be capable of withstanding without bursting a pressure of two times the pressure of contents at 70° F., or one and one-half times the pressure of the contents at 130° F., whichever is greater.

(3) Cream in metal containers with soluble or emulsified compressed gas. Containers shall be of such design that they will hold pressure without permanent deformation up to 375 psig and shall be equipped with a device designed so as to release pressure without bursting of the container or dangerous projection of its parts at higher pressures. This exemption applies to shipments offered for transportation by refrigerated motor vehicles only.

(4) Inside nonrefillable metal containers charged with a solution containing biological products or a medical preparation which will be deteriorated by heat and compressed gas or gases, which is nonpoisonous and nonflammable, and of capacity not to exceed 31.83 cubic inches (17.6 fluid ounces). Pressure in the container not to exceed 55 pounds psi absolute at 70° F., and the liquid content of the product and gas must not completely fill the container at 130° F. One completed container out of each lot of 500 or less, filled for shipment, must have been heated, until content reached a minimum temperature of 130° F., without evidence of leakage, distortion, or other defect.

(5) Electronic tubes of not more than 30 cubic-inch volume charged with gas to a pressure of not more than 35 psig.

(6) Inside metal containers of a capacity not to exceed 35 cubic inches, charged with nonflammable, nonpoisonous liquefied compressed gas to be used in conjunction with audible fire alarm systems. Pressure in the container must

not exceed 85 psi absolute at 70° F. The completely assembled containers must be capable of withstanding without bursting a pressure of 1000 psi. The liquid portion of the gas must not completely fill the container at 130° F.

(c) *Fire extinguishers and component parts thereof.* Fire extinguishers and component parts thereof containing compressed gas for the purpose of expelling fire extinguishing contents, which must be nonliquefied gas when in containers exceeding 30 cubic inches capacity, when shipped under the following conditions are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter:

(1) Must be shipped as inside containers.

(2) The container under stored pressure shall have an internal volume not exceeding 1,100 cubic inches.

(3) The pressure in the container shall not exceed 200 psi at 70° F.

(4) The contents shall be nonflammable as covered in §§ 73.115 and 73.150; nonpoisonous as covered in § 73.325(a), class A, B, or C; and not corrosive as defined in § 73.240.

(5) Except as provided in subparagraph (6) of this paragraph, each container must be tested before shipment to at least three times the pressure in the container at 70° F. when charged and not less than 120 pounds per square inch, and before refilling and reshipping must be retested at this pressure before each shipment. The container shall show no leakage or damage when subjected to this pressure.

(6) When spec. 2P (§ 78.33 of this chapter) inside metal containers are used for pressures not exceeding 85 psi absolute, at 70° F. or 115 psi absolute, at 130° F. the test requirements of subparagraph (5) of this paragraph do not apply, but each container must be capable of having the contents heated to 130° F. without evidence of leakage or permanent distortion.

(d) *Truck bodies or trailers on flat cars; automobiles, motorcycles, tractors, or other self-propelled vehicles.* (1) Truck bodies or trailers with automatic heating or refrigerating equipment of the gas burning type may be shipped with fuel tanks filled and equipment operating or inoperative, when used for the transportation of other freight and loaded on flat cars as part of a joint rail-highway movement, provided the equipment and fuel supply are of a type approved by the Bureau of Explosives. The heating or refrigerating units are exempt from specification packaging, marking, and labeling requirements in this service and shall be considered as carriers equipment but not as shipments.

(2) Automobiles, motorcycles, tractors, or other self-propelled vehicles, equipped with liquefied petroleum gas or other fuel tanks, provided such tanks are securely closed, are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter. When offered for transportation by carriers by rail freight or highway, drainage of fuel tanks is not required. When offered for transportation by rail express, fuel tanks must have been emptied and securely closed.

(e) *Refrigerating machines and hydraulic accumulators.* (1) Refrigerating machines or components thereof which are factory-made, factory-tested and intended to be shipped only once to the point of installation, containing not over 1,000 pounds of Group 1 refrigerant as classified in American Standard Safety Code for Mechanical Refrigeration (ASA–B9.1–1958) (or 50 pounds of refrigerant other than Group 1) in each pressure vessel and containing an aggregate of not more than 2,000 pounds of Group 1 refrigerant (or 100 pounds of refrigerant other than Group 1) when containing more than two charged vessels, when shipped under the following conditions are exempt from specification packaging, marking and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter:

(i) Each pressure vessel shall be equipped with a safety relief device meeting the requirements of the American Standard Safety Code for Mechanical Refrigeration (ASA–B9.1–1958). In a refrigerating machine containing more than one pressure vessel, each pressure vessel shall be equipped with individual shut-off valve or valves which shall be closed while in transportation. Such pressure vessels shall be manufactured, tested and inspected in accordance with American Standard B9.1–1958 and when over 6 inches internal diameter, in accordance with Section VIII of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (1959 edition including all addendas through the Winter 1961 Addenda issued December 29, 1961). All parts subject to refrigerant pressure during shipment must be tested in accordance with American Standard B9.1–1958.

(ii) The liquid portion of the refrigerant, if any, must not completely fill any pressure vessel at 130° F.

(iii) The amount of refrigerant, if liquefied, must not exceed the filling densities prescribed in § 73.304.

(2) *Hydraulic accumulators.* Hydraulic accumulators and component parts thereof containing nonliquefied, nonflammable gas for the purpose of operation when shipped under the following conditions are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter:

(i) Must be shipped as inside containers.

(ii) The container under stored pressure shall have an internal volume not exceeding 1,100 cubic inches.

(iii) The pressure in the container shall not exceed 200 pounds psi at 70° F.

(iv) The contents shall be nonflammable as covered in § 73.115.

(v) Each container must be tested before shipment to at least three times the pressure in the container at 70° F. when charged and not less than 120 psi, and before refilling and reshipping must be retested at this pressure before each shipment. The container shall show no leakage or damage when subjected to this pressure.

### § 73.314 Requirements for compressed gases in tank cars.

(a) *Definitions.* For definitions of compressed gases, see § 73.300.

(b) *General requirements.*

(1) Tank cars containing compressed gases must not be shipped unless they were loaded by or with the consent of the owner thereof.

(2) Tank cars must not contain gases capable of combining chemically and must not be loaded with any gas which combines chemically with the gas previously loaded therein, until all residue has been removed and interior of tank thoroughly cleaned.

(3) For cars of the ICC–106A and 110A class, the tanks must be placed in position and attached to car structure by the shipper.

(4) Wherever the word "approved" is used in this part of the regulations, it means approval by the Association of American Railroads Committee on Tank Cars as prescribed in § 79.3 of this chapter.

(c) *Authorized gases, filling densities, tank cars.* Compressed gases transported in tank cars must be shipped as provided in paragraphs (b) to (g) of this section, § 73.432, and the following table:

| Kind of gas | Maximum permitted filling density, Note 1 | Required tank car, see §73.31(2) and (3) |
|---|---|---|
| | *Percent* | |
| Anhydrous ammonia | 50 | ICC–106A500–X, Note 7. |
| | 57 | ICC–105A300–W. |
| | 57 | ICC–112A400–F, 112A340–W, Note 15. |
| | 58.8 | ICC–112A400–F, 112A340–W, Note 15. |
| Aqua ammonia solution containing anhydrous ammonia. | Note 21 | ICC–105A100–W, 105A100AL–W, 109A100AL–W, 109A300–W, 111A100–W–4, Note 20. |
| Argon | Note 20 | ICC–107A. |
| Butadiene (pressure not exceeding 75 pounds per square inch at 105° F.), inhibited. | Notes 18 and 21 | ICC–106A500X. |
| | | ICC–105A100, 105A100–W, 111A100–W–4, Note 4. |

See footnotes at end of table.

| Kind of gas | Maximum permitted filling density, Note 1 | Required tank car, see §73.31(2) and (3) |
|---|---|---|
| | *Percent* | |
| Butadiene (pressure not exceeding 255 pounds per square inch at 115° F.), inhibited. | Notes 18 and 21 | ICC–112A340–W, Notes 4 and 20. |
| Butadiene (pressure not exceeding 300 pounds per square inch at 115° F.), inhibited. | Notes 18 and 21 | ICC–112A400–W, Notes 4 and 20. |
| Carbon dioxide, liquefied | Note 5 | ICC–105A600–W, Note 6. |
| Chlorine | 125 | ICC–106A500X, Note 7. |
| | 125 | ICC–105A300–W, Notes 3 and 12. |
| Crude nitrogen fertilizer solution | Note 21 | ICC–106A500X. |
| | | ICC–105A300–W, 109A300–W, Note 20. |
| Crude nitrogen fertilizer solution (pressure not exceeding 75 pounds per square inch at 105° F.). | Note 21 | ICC–106A500X. |
| | | ICC–105A100–AL–W, 109A100–AL–W, Note 20. |
| Dichlorodifluoromethane; Note 13 | 110 | ICC–106A500X, 110A500–W, Note 7. |
| | 125 | ICC–105A300–W. |
| Dichlorodifluoromethane and difluoroethane mixture (constant boiling mixture); Note 13. | Note 21 | ICC–106A500X, 110A500–W, Note 7. |
| | | ICC–105A300–W. |
| Dichlorodifluoromethane-dichlorotetrafluoroethane mixture; Note 13. | 110 | ICC–106A500X, 110A500–W, Note 7. |
| | 125 | ICC–105A300–W. |
| Dichlorodifluoromethane-monochlorodifluoromethane mixture; Note 13. | 119 | ICC–106A500X, 110A500–W, Note 7. |
| | 125 | ICC–105A300–W. |
| Dichlorodifluoromethane-monofluorotrichloromethane mixture; Note 13. | Note 22 | ICC–106A500X, 110A500–W, Note 7. |
| | | ICC–105A300–W. |
| Dichlorodifluoromethane-trichloromonofluoromethane-monochlorodifluoromethane mixture; Note 13. | 119 | ICC–106A500X, 110A500–W, Note 7. |
| | 125 | ICC–105A300–W. |
| Dichlorodifluoromethane- richlorotrifluoroethane mixture; Note 13. | 119 | ICC–106A500X, 110A500–W, Note 7. |
| | 125 | ICC–105A300–W. |
| Difluoroethane | 79 | ICC–106A500X, 110A500–W, Note 7. |
| | 84 | ICC–105A300–W. |
| Difluoromonochloroethane | 100 | ICC–106A500X, 110A500–W, Note 7. |
| Dimethylamine, anhydrous | 59 | ICC–106A500X. |
| | 62 | ICC–105A300–W, Note 4. |
| Dimethyl ether | 59 | ICC–106A500X. |
| | 62 | ICC–105A300–W, Note 4. |
| Fertilizer ammoniating solution containing free ammonia. | Note 21 | ICC–106A500X. |
| | | ICC–105A300–W, 109A300–W, Note 20. |
| Fertilizer ammoniating solution containing free ammonia (pressure not exceeding 75 pounds per square inch at 105° F.). | Note 21 | ICC–106A500X. |
| | | ICC–105A100–AL–W, 109A100–AL–W, Note 20. |
| Fertilizer ammoniating solution containing free ammonia (pressure not exceeding 150 pounds per square inch at 105° F.). | Note 21 | ICC–106A500X. |
| | | ICC–105A200–AL–W, Note 20. |
| Helium | Note 20 | ICC–107A. |
| Hexafluoropropylene | 110 | ICC–106A500–X, 110A500–W, Note 7. |
| Hydrogen | Note 20 | ICC–107A, Note 2. |
| Hydrogen sulfide | 68 | ICC–106A800X, Notes 7 and 8. |
| Liquid hydrocarbon gas (pressure not exceeding 75 pounds per square inch at 105° F.). | Note 21 | ICC–105A100[1], 105A100–W, 111A100–W–4, Note 4. |
| Liquid hydrocarbon gas (pressure not exceeding 225 pounds per square inch at 105° F.). | Note 21 | ICC–105A300–W, Note 4. |
| Liquid hydrocarbon gas (pressure not exceeding 300 pounds per square inch at 105° F.). | Note 21 | ICC–105A400–W, Note 4. |
| Liquid hydrocarbon gas (pressure not exceeding 375 pounds per square inch at 105° F.). | Note 21 | ICC–105A500–W, Note 4. |
| Liquid hydrocarbon gas (pressure not exceeding 375 pounds per square inch at 130° F.). | Note 21 | ICC–106A500X. |
| Liquid hydrocarbon gas (pressure not exceeding 450 pounds per square inch at 105° F.). | Note 21 | ICC–105A600–W, Note 4. |
| Liquefied petroleum gas (pressure not exceeding 75 pounds per square inch at 105° F.). | Note 18 | ICC–105A100,[1] 105A100–W, 111A100–W–4, Note 4. |
| Liquefied petroleum gas (pressure not exceeding 150 pounds per square inch at 105° F.). | Note 18 | ICC–105A200–W, 105A200AL–W, Note 4. |
| Liquefied petroleum gas (pressure not exceeding 225 pounds per square inch at 105° F.). | Note 18 | ICC–105A300–W, Notes 4 and 20. |
| Liquefied petroleum gas (pressure not exceeding 255 pounds per square inch at 115° F.). | Note 18 | ICC–112A340–W, Notes 4 and 20. |
| Liquefied petroleum gas (pressure not exceeding 300 pounds per square inch at 105° F.). | Note 18 | ICC–105A400–W, Notes 4 and 20. |
| Liquefied petroleum gas (pressure not exceeding 300 pounds per square inch at 115° F.). | Note 18 | ICC–112A400–F, 112A400–W, Notes 4 and 20. |
| Liquefied petroleum gas (pressure not exceeding 375 pounds per square inch at 105° F.). | Note 18 | ICC–105A500–W, Notes 4 and 20. |
| Liquefied petroleum gas (pressure not exceeding 375 pounds per square inch at 130° F.). | Note 18 | ICC–106A500X. |
| Liquefied petroleum gas (pressure not exceeding 450 pounds per square inch at 105° F.). | Note 18 | ICC–105A600–W, Notes 4 and 20. |
| Methyl acetylene—15% to 20% propadiene mixture. | 56 | ICC–105A300–W. |
| Methyl chloride | 84 | ICC–106A500X, Note 7. |
| | | ICC–105A300–W, Note 4. |
| Methyl chloride-methylene chloride mixture | Note 22 | ICC–106A500X, Note 7. |
| | | ICC–105A300–W, Note 4. |
| Methyl mercaptan | 80 | ICC–106A500X, Notes 7 and 14. |
| | 82 | ICC–105A300–W, Note 4. |
| Monobromotrifluoromethane | 124 | ICC–110A800–W, Notes 7 and 13. |
| Monochlorodifluoromethane; Note 13 | 105 | ICC–106A500X, 110A500–W, Note 7. |
| | 110 | ICC–105A300–W. |
| Monochlorotetrafluoroethane; Note 13 | 125 | ICC–106A500X, 110A500–W, Note 7. |
| Monomethylamine, anhydrous | 60 | ICC–106A500X. |
| | 62 | ICC–105A300–W, Note 4. |
| Nitrogen | Note 20 | ICC–107A. |
| Nitrogen fertilizer solution | Note 21 | ICC–106A500X. |
| | | ICC–105A300–W, 109A300–W, 109A300AL–W, Note 20. |
| Nitrogen fertilizer solution (pressure not exceeding 75 pounds per square inch at 105° F.). | Note 21 | ICC–106A500X. |
| | | ICC–105A100–AL–W, 109A100–AL–W, Note 20. |
| Nitrosyl chloride | 110 | ICC–106A800–X, Notes 7 and 11. |
| | 124 | ICC–105A300–W, Note 10. |
| Oxygen | Note 20 | ICC–107A. |
| Sulfur dioxide | 125 | ICC–106A500X, 110A500–W, Note 7. |
| | | ICC–105A200–W. |
| Trifluorochloroethylene | 115 | ICC–106A500X, 110A500–W, Note 7. |
| Trimethylamine, anhydrous | 120 | ICC–105A300–W, Note 4. |
| | 57 | ICC–106A500X. |
| | 59 | ICC–105A300–W, Note 4. |
| Vinyl chloride; Note 9 | 84 | ICC–106A500–X, Note 7. |
| | 87 | ICC–105A200–W, Notes 4 and 16. |
| | 86 | ICC–112A400–W, Note 4. |
| Vinyl fluoride, inhibited | 58 | ICC–105A600–W, Note 17. |
| Vinyl methyl ether, inhibited; Note 9 | 68 | ICC–105A100,[1] 105A100–W, Note 4. |
| | 68 | ICC–106A500–X, Note 7. |

[1] Use of existing tank cars authorized, but new construction not authorized.

NOTE 1: The filling density for liquefied gases is hereby defined as the percent ratio of the weight of gas in the tank to the weight of water that the tank will hold. For determining the water capacity of the tank in pounds the weight of a gallon (231 cubic inches) of water at 60° F. in air shall be 8.32828 pounds.

NOTE 2: Each tank must be equipped with one or more safety relief devices of approved type and discharge area; the discharge outlet of each safety relief device must be connected to a manifold having an unobstructed discharge area of at least 1¼ times the total discharge area of the safety relief devices connected to the manifold; all manifolds must be connected to a single common header having an unobstructed discharge outlet pointing upward and extending above top of the car; the header and the header outlet must each have an unobstructed discharge area at least equal to the total discharge area of the manifolds connected to the header; the header outlet must be equipped with an approved ignition device which will instantly ignite any hydrogen discharged through the safety relief device.

NOTE 3: For tank cars other than ICC–106A class used for the transportation of chlorine, interior pipes of liquid discharge valves must be equipped with excess-flow valves of approved design.

NOTE 4: For tank cars other than ICC–106A class used for the transportation of liquefied flammable gases, interior pipes of loading and unloading valves must be equipped with excess-flow valves of approved design.

NOTE 5: The liquid portion of the gas at 0° F. must not completely fill the tank.

NOTE 6: Tank must be insulated with an approved material of a thickness so that the thermal conductance is not more than 0.03 B.t.u. per square foot, per degree F. differential in temperature per hour; except that the insulation thickness directly over the center sills may be reduced to give thermal conductance not exceeding 0.04 B.t.u. per square foot, per degree F. differential in temperature per hour; this reduction is to permit an anchorage which must not exceed 7 inches from top of center sills to bottom of tank. Tank must be equipped with one safety relief valve of approved design set to open at a pressure not exceeding ¾ of the test pressure of the tank and one frangible disc of approved design set to function at a pressure less than the test pressure of the tank. The discharge capacity of each of these safety relief devices must be sufficient to prevent building up of pressure in tank in excess of ¾ of the test pressure of the tank. Tanks must be equipped with two pressure-regulating valves of approved design set to open at a pressure not to exceed 350 psi on 105A500–W tanks and at a pressure not to exceed 400 psi on 105A600–W tanks. Each regulating valve and safety relief device must have its final discharge piped to the outside of the protective housing.

NOTE 7: Tanks complying with ICC–106A or 110A specifications, used for the transportation of compressed gases as authorized in paragraph (c) of this section may be transported in or on motor vehicles and in the manner authorized in §77.840(c) of this chapter, provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting. See §74.560(b)(1) of this chapter.

NOTE 8: Tanks shall not be equipped with safety relief devices of any description and valves must be protected by supplemental gas-tight closures approved by the Bureau of Explosives.

NOTE 9: All parts of valves and safety relief devices in contact with content of tank must be of a metal or other material suitably treated if necessary, which will not cause formation of any acetylides.

NOTE 10: Tanks must be made of or clad with a metal not subject to rapid deterioration by the lading; all appurtenances such as manhole covers, venting, loading and discharge valves, safety relief valves, check valves, and eduction pipes, must be made of metal not subject to rapid deterioration by the lading; cork must be used as an insulating material.

NOTE 11: Tanks for nitrosyl chloride shall be nickel-clad and safety relief devices shall be of the fusible plug type and shall function at a temperature of not exceeding 175° F. and be vapor tight at 130° F.

NOTE 12: The quantity of chlorine loaded into a single-unit tank car must not exceed 60,000 pounds except that not more than 110,000 pounds nor less than 107,800 pounds of chlorine may be loaded in such cars if insulated with 4 inches of corkboard and constructed, maintained, and retested in full compliance with ICC Specification 105A500–W. Cars

may be registered and jackets stenciled either 105A300–W or 105A500–W and equipped with the safety relief valve required by the specification to which registered.

NOTE 13: This gas may be transported in authorized tank car tanks stenciled "DISPERSANT GAS" or "REFRIGERANT GAS."

NOTE 14: Container shall not be equipped with safety relief devices of any description.

NOTE 15: A filling density of 58.8 percent may be used during the months of November through March, inclusive. When this filling density is used, tank cars must be loaded and shipped directly to consumers for unloading. Storage in transit is not permitted.

NOTE 16: Openings in tank heads to facilitate application of nickel lining are authorized and must be closed in an approved manner.

NOTE 17: Tank must be insulated with an approved material of a thickness so that the thermal conductance is not more than 0.03 B.t.u. per square foot per degree F. differential in temperature per hour; except that the insulation thickness directly over center sills may be reduced to give thermal conductance not exceeding 0.04 B.t.u. per square foot per degree F. differential in temperature per hour; this reduction is to permit an anchorage which must not exceed 7 inches from top of center sills to bottom of tank. In addition to the safety relief valve required by § 78.289–13 of this chapter, the tank must be equipped with one frangible disc of approved design set to function at a pressure less than 600 pounds per square inch but not less than 450 pounds per square inch. The discharge capacity of each of these safety relief devices must be sufficient to prevent building up of pressure in tank in excess of 495 pounds per square inch. Each safety relief device must have its discharge piped to the outside of the protective housing. The temperature of the vinyl fluoride, inhibited when the car is offered in transportation shall not exceed zero degrees F. and the pressure shall not exceed 105 psi. The shipper shall notify the Bureau of Explosives whenever a car is not received by the consignee within 30 days from the date of shipment.

NOTE 18: See paragraph (f) of this section.

NOTE 19: See paragraph (f)(2) of this section.

NOTE 20: See paragraph (d)(1) of this section.

NOTE 21: See paragraph (d)(2) of this section.

NOTE 22: See paragraph (d) of this section.

(d) *Filling limits*—(1) *Non-liquefied and liquefied gas.* The gas pressure at 105° F. in any insulated tank car tank of the ICC–105A and 109A–W class or spec. ICC–111A100–W–4; at 115° F. in any uninsulated tank car tank of the ICC–112A–W and 114A–W class; or at 130° F. in any uninsulated tank car tank of the ICC–106A and 110A–W class must not exceed three-fourths times the prescribed retest pressure of the tank. The gas pressure at 130° F. in any uninsulated tank car tank of the ICC–107A series must not exceed seven-tenths of the marked test pressure of the tank.

NOTE 1: ICC–107A tanks may be charged with helium to a pressure 10% in excess of the marked maximum gas pressure at 130° F. of each tank.

(2) *Liquefied gas.* In addition to the requirements of paragraph (d)(1) of this section, the liquid portion of the gas at 105° F. must not completely fill an insulated tank, nor at 130° F. must not completely fill an uninsulated tank with the exception that the liquid portion of the gas at 115° F. must not completely fill an uninsulated tank car tank of the ICC–112A–W and 114A–W classes.

(e) *Verification of content.* The amount of liquefied gas loaded into each tank may be determined either, first, by weight, and this weight must be checked after disconnecting the loading line, by the use of proper scales, or second, the weight of liquefied petroleum gas, dimethylamine, monomethylamine, and trimethylamine may be calculated using the outage tables supplied by the tank car owners and the specific gravities as determined at the plant, and this computation must be checked by determination of specific gravity of product after loading. Carriers may verify calculated weights by use of proper scales.

(f) *Special requirements for liquefied petroleum gas and butadiene tank cars*—(1) *Single unit tank cars.* Maximum filling density in single unit tank cars shall be as shown in the following table:

Maximum permitted filling density

| Specific gravity at 60° F. | Insulated cars | | Uninsulated cars | |
|---|---|---|---|---|
| | April through October | November through March (see Note 1) | April through October | November through March (see Note 1) |
| 0.500 | 48.500 | 47.40 | 44.88 | 46.88 |
| 0.501 | 48.600 | 47.51 | 45.00 | 47.00 |
| 0.502 | 48.700 | 47.62 | 45.13 | 47.10 |
| 0.503 | 48.800 | 47.73 | 45.25 | 47.20 |
| 0.504 | 48.900 | 47.84 | 45.38 | 47.30 |
| 0.505 | 49.000 | 47.95 | 45.50 | 47.40 |
| 0.506 | 49.125 | 48.06 | 45.60 | 47.50 |
| 0.507 | 49.250 | 48.17 | 45.70 | 47.63 |
| 0.508 | 49.375 | 48.28 | 45.80 | 47.75 |
| 0.509 | 49.500 | 48.39 | 45.90 | 47.88 |
| 0.510 | 49.750 | 48.51 | 46.00 | 48.00 |
| 0.511 | 47.000 | 48.61 | 46.13 | 48.10 |
| 0.512 | 47.125 | 48.72 | 46.25 | 48.20 |
| 0.513 | 47.250 | 48.83 | 46.38 | 48.30 |
| 0.514 | 47.375 | 48.94 | 46.50 | 48.40 |
| 0.515 | 47.500 | 49.05 | 46.63 | 48.50 |
| 0.516 | 47.625 | 49.16 | 46.75 | 48.63 |
| 0.517 | 47.750 | 49.27 | 46.88 | 48.75 |
| 0.518 | 47.875 | 49.38 | 47.00 | 48.88 |
| 0.519 | 48.000 | 49.49 | 47.13 | 49.00 |
| 0.520 | 48.125 | 49.60 | 47.25 | 49.10 |
| 0.521 | 48.250 | 49.70 | 47.38 | 49.20 |
| 0.522 | 48.375 | 49.81 | 47.50 | 49.30 |
| 0.523 | 48.500 | 49.92 | 47.63 | 49.40 |
| 0.524 | 48.600 | 50.03 | 47.75 | 49.50 |
| 0.525 | 48.700 | 50.14 | 47.88 | 49.63 |
| 0.526 | 48.800 | 50.25 | 48.00 | 49.75 |
| 0.527 | 48.900 | 50.36 | 48.13 | 49.88 |
| 0.528 | 49.000 | 50.47 | 48.25 | 50.00 |
| 0.529 | 49.125 | 50.58 | 48.38 | 50.10 |
| 0.530 | 49.250 | 50.69 | 48.50 | 50.20 |
| 0.531 | 49.375 | 50.79 | 48.63 | 50.30 |
| 0.532 | 49.500 | 50.90 | 48.75 | 50.40 |
| 0.533 | 49.625 | 51.01 | 48.88 | 50.50 |
| 0.534 | 49.750 | 51.12 | 49.00 | 50.63 |
| 0.535 | 49.875 | 51.23 | 49.13 | 50.75 |
| 0.536 | 50.000 | 51.34 | 49.25 | 50.88 |
| 0.537 | 50.100 | 51.45 | 49.38 | 51.00 |
| 0.538 | 50.200 | 51.56 | 49.50 | 51.10 |
| 0.539 | 50.300 | 51.67 | 49.60 | 51.20 |
| 0.540 | 50.400 | 51.78 | 49.70 | 51.30 |
| 0.541 | 50.500 | 51.88 | 49.80 | 51.40 |
| 0.542 | 50.625 | 51.99 | 49.90 | 51.50 |
| 0.543 | 50.750 | 52.09 | 50.00 | 51.63 |
| 0.544 | 50.875 | 52.20 | 50.13 | 51.75 |
| 0.545 | 51.000 | 52.31 | 50.25 | 51.88 |
| 0.546 | 51.100 | 52.41 | 50.38 | 52.00 |
| 0.547 | 51.200 | 52.52 | 50.50 | 52.10 |
| 0.548 | 51.300 | 52.62 | 50.63 | 52.20 |
| 0.549 | 51.400 | 52.73 | 50.75 | 52.30 |
| 0.550 | 51.500 | 52.84 | 50.88 | 52.40 |
| 0.551 | 51.625 | 52.94 | 51.00 | 52.50 |
| 0.552 | 51.750 | 53.05 | 51.13 | 52.63 |
| 0.553 | 51.875 | 53.16 | 51.25 | 52.75 |
| 0.554 | 52.000 | 53.25 | 51.38 | 52.88 |
| 0.555 | 52.125 | 53.37 | 51.50 | 53.00 |
| 0.556 | 52.250 | 53.48 | 51.60 | 53.10 |
| 0.557 | 52.375 | 53.58 | 51.70 | 53.20 |
| 0.558 | 52.500 | 53.69 | 51.80 | 53.30 |
| 0.559 | 52.625 | 53.80 | 51.90 | 53.40 |
| 0.560 | 52.750 | 53.91 | 52.00 | 53.50 |
| 0.561 | 52.875 | 54.01 | 52.13 | 53.63 |
| 0.562 | 53.000 | 54.12 | 52.25 | 53.75 |
| 0.563 | 53.100 | 54.22 | 52.38 | 53.88 |
| 0.564 | 53.200 | 54.33 | 52.50 | 54.00 |

Maximum permitted filling density

| Specific gravity at 60° F. | Insulated cars | | Uninsulated cars | |
|---|---|---|---|---|
| | April through October | November through March (see Note 1) | April through October | November through March (see Note 1) |
| 0.565 | 53.300 | 54.43 | 52.63 | 54.10 |
| 0.566 | 53.400 | 54.54 | 52.75 | 54.20 |
| 0.567 | 53.500 | 54.64 | 52.88 | 54.30 |
| 0.568 | 53.600 | 54.75 | 53.00 | 54.40 |
| 0.569 | 53.700 | 54.85 | 53.10 | 54.50 |
| 0.570 | 53.800 | 54.96 | 53.20 | 54.60 |
| 0.571 | 53.900 | 55.06 | 53.30 | 54.70 |
| 0.572 | 54.000 | 55.17 | 53.40 | 54.80 |
| 0.573 | 54.125 | 55.27 | 53.50 | 54.90 |
| 0.574 | 54.250 | 55.38 | 53.63 | 55.00 |
| 0.575 | 54.375 | 55.48 | 53.75 | 55.13 |
| 0.576 | 54.500 | 55.59 | 53.88 | 55.25 |
| 0.577 | 54.600 | 55.69 | 54.00 | 55.38 |
| 0.578 | 54.700 | 55.80 | 54.10 | 55.50 |
| 0.579 | 54.800 | 55.90 | 54.20 | 55.60 |
| 0.580 | 54.900 | 56.01 | 54.30 | 55.70 |
| 0.581 | 55.000 | 56.11 | 54.40 | 55.80 |
| 0.582 | 55.100 | 56.22 | 54.50 | 55.90 |
| 0.583 | 55.200 | 56.32 | 54.63 | 56.00 |
| 0.584 | 55.300 | 56.43 | 54.75 | 56.13 |
| 0.585 | 55.400 | 56.53 | 54.88 | 56.25 |
| 0.586 | 55.500 | 56.64 | 55.00 | 56.38 |
| 0.587 | 55.625 | 56.74 | 55.13 | 56.50 |
| 0.588 | 55.750 | 56.85 | 55.25 | 56.60 |
| 0.589 | 55.875 | 56.95 | 55.38 | 56.70 |
| 0.590 | 56.000 | 57.06 | 55.50 | 56.80 |
| 0.591 | 56.090 | 57.15 | 55.60 | 56.90 |
| 0.592 | 56.180 | 57.25 | 55.70 | 57.00 |
| 0.593 | 56.270 | 57.34 | 55.80 | 57.10 |
| 0.594 | 56.360 | 57.44 | 55.90 | 57.20 |
| 0.595 | 56.450 | 57.53 | 56.00 | 57.30 |
| 0.596 | 56.540 | 57.63 | 56.13 | 57.40 |
| 0.597 | 56.630 | 57.72 | 56.25 | 57.50 |
| 0.598 | 56.720 | 57.82 | 56.38 | 57.60 |
| 0.599 | 56.810 | 57.91 | 56.50 | 57.70 |
| 0.600 | 56.900 | 58.01 | 56.62 | 57.80 |
| 0.601 | 56.990 | 58.10 | 56.73 | 57.90 |
| 0.602 | 57.080 | 58.20 | 56.84 | 58.00 |
| 0.603 | 57.170 | 58.29 | 56.95 | 58.13 |
| 0.604 | 57.260 | 58.39 | 57.07 | 58.25 |
| 0.605 | 57.350 | 58.49 | 57.18 | 58.38 |
| 0.606 | 57.440 | 58.58 | 57.30 | 58.50 |
| 0.607 | 57.530 | 58.68 | 57.41 | 58.63 |
| 0.608 | 57.620 | 58.77 | 57.52 | 58.75 |
| 0.609 | 57.710 | 58.87 | 57.64 | 58.88 |
| 0.610 | 57.800 | 58.97 | 57.76 | 59.00 |
| 0.611 | 57.890 | 59.06 | 57.87 | 59.10 |
| 0.612 | 57.980 | 59.16 | 57.98 | 59.20 |
| 0.613 | 58.070 | 59.26 | 58.09 | 59.30 |
| 0.614 | 58.160 | 59.35 | 58.21 | 59.40 |
| 0.615 | 58.250 | 59.45 | 58.32 | 59.50 |
| 0.616 | 58.340 | 59.55 | 58.43 | 59.63 |
| 0.617 | 58.430 | 59.64 | 58.55 | 59.75 |
| 0.618 | 58.520 | 59.74 | 58.66 | 59.88 |
| 0.619 | 58.610 | 59.84 | 58.77 | 59.97 |
| 0.620 | 58.700 | 59.94 | 58.89 | 60.07 |
| 0.621 | 58.790 | 60.03 | 59.00 | 60.18 |
| 0.622 | 58.880 | 60.13 | 59.12 | 60.28 |
| 0.623 | 58.970 | 60.23 | 59.23 | 60.38 |
| 0.624 | 59.060 | 60.32 | 59.34 | 60.49 |
| 0.625 | 59.150 | 60.42 | 59.46 | 60.59 |
| 0.626 | 59.240 | 60.52 | 59.57 | 60.70 |
| 0.627 | 59.330 | 60.61 | 59.68 | 60.80 |
| 0.628 | 59.420 | 60.71 | 59.80 | 60.90 |
| 0.629 | 59.510 | 60.81 | 59.91 | 61.01 |
| 0.630 | 59.600 | 60.91 | 60.03 | 61.11 |
| 0.631 | 59.690 | 61.00 | 60.13 | 61.18 |
| 0.632 | 59.780 | 61.10 | 60.28 | 61.28 |
| 0.633 | 59.870 | 61.19 | 60.34 | 61.38 |
| 0.634 | 59.960 | 61.29 | 60.44 | 61.47 |
| 0.635 | 60.050 | 61.39 | 60.55 | 61.57 |

NOTE 1: When these filling densities are used, tank cars must be shipped directly to consumers for unloading. Storage in transit is not permitted.

(2) *ICC–106A class tank cars.* Maximum filling density in ICC–106A class tank cars shall be as shown in § 73.304 (d)(1).

(g) *Foreign tank cars in domestic use.* Except as authorized by § 73.8 tank cars made in foreign countries, except Canada, must not be used in domestic traffic until they have been tested in this country and proper reports rendered as required by the specifications that apply.

**§ 73.315 Compressed gases in cargo tanks and portable tank containers.**

(a) Cargo tanks and portable tank containers must not contain gases capable of combining chemically.

(1) Compressed gases must not be shipped in cargo tanks or portable tank containers except as provided in this section and §§ 73.32 and 73.33, and in the following table (for marking requirements see §§ 73.401 (a) (1) and 77.823 (d) of this chapter):

| Kind of gas | Maximum permitted filling density | | Specification container required | |
|---|---|---|---|---|
| | Percent by weight (see Note 1) | Percent by volume (see par. (f) of this section) | Type (see Note 2) | Minimum design pressure (psig) |
| Anhydrous ammonia | 56 | 82; see Note 5 | ICC-51, MC-330 | 265. |
| Anhydrous dimethylamine | 59 | See Note 7 | ICC-51, MC-330 | 150. |
| Anhydrous monomethylamine | 60 | See Note 7 | ICC-51, MC-330 | 150. |
| Anhydrous trimethylamine | 57 | See Note 7 | ICC-51, MC-330 | 150. |
| Aqua ammonia solution containing anhydrous ammonia. | See par. (c) of this section. | See Note 7 | MC 330; see Note 12. | 100; see subpar. (c) (1) of this section. |
| Butadiene, inhibited | See par. (b) of this section. | See par. (b) of this section. | ICC-51, MC 330 | 100. |
| Carbon dioxide, liquefied | See par. (c) of this section. | 95 | ICC-51, MC-330 | 200; see Note 3. |
| Chlorine | 125 | See Note 7 | MC-330 | 225; see Notes 4 and 8. |
| Dichlorodifluoromethane (see Note 9) | 119 | See Note 7 | ICC-51, MC-330 | 150. |
| Dichlorodifluoromethane and difluoroethane mixture (constant boiling mixture) (see Note 9). | See par. (c) of this section. | See Note 7 | MC 330 | 260. |
| Dichlorodifluoromethane-dichlorotetrafluoroethane mixture (see Note 9). | 119 | See Note 7 | ICC-51, MC-330 | 150. |
| Dichlorodifluoromethane-monofluorotrichloromethane mixture (see Note 9). | See par. (c) of this section. | See Note 7 | ICC-51, MC-330 | 150. |
| Difluoroethane | 79 | See Note 7 | MC-330 | 150 |
| Hexafluoropropylene | 110 | See Note 7 | MC-330 | 260. |
| Liquefied petroleum gas | See par. (b) of this section. | See par. (b) of this section. | ICC-51, MC-330 | See subpar. (c) (1) of this section. |
| Methyl chloride | 84 | 88.5 | ICC-51, MC-330 | 150. |
| Methyl chloride (optional portable tank 2,000 pounds water capacity, fusible plug). | 84 | See Note 6 | ICC-51 | 225. |
| Methyl mercaptan | 80 | 90 | ICC-51, MC-330 | 100. |
| Monochlorodifluoromethane (see Note 9). | 105 | See Note 7 | ICC-51, MC-330 | 250. |
| Nitrous oxide | See par. (c) of this section. | 95 | ICC-51, MC-330 | 200; see Note 3. |
| Sulfur dioxide (tanks not over 1,200 gallons water capacity). | 125 | 87.5 | ICC-51, MC-330 | 150; see Note 4. |
| Sulfur dioxide (tanks over 1,200 gallons water capacity). | 125 | 87.5 | ICC-51, MC-330 | 125; see Note 4. |
| Sulfur dioxide (optional portable tank 1,000–2,000 pounds water capacity, fusible plug). | 125 | See Note 6 | ICC-51 | 225. |
| Vinyl chloride | 84 (see Note 13) | See Note 7 | MC-330 | 150. |
| Vinyl fluoride, inhibited | 66 | See Note 7 | MC 330 | 250; see Note 11. |

NOTE 1: Maximum filling density for liquefied gases is hereby defined as the percent ratio of the weight of gas in the tank to the weight of water that the tank will hold. For determining the water capacity of the tank in pounds, the weight of a gallon (231 cubic inches) of water at 60° F. in air shall be 8.32828 pounds.

NOTE 2: See §§ 73.32 and 73.33 for authority to use containers made prior to May 15, 1950.

NOTE 3: If cargo tanks and portable tank containers for carbon dioxide and nitrous oxide are designed to comply with the requirements for "Low Temperature Operation of the A.S.M.E. Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels," the design pressure may be reduced to 100 psig or the controlled pressure, whichever is greater.

NOTE 4: A corrosion factor shall be applied in the design of tanks for sulfur dioxide and chlorine. (See § 78.336–3 (a) of this chapter.)

NOTE 5: Unlagged cargo tanks and portable tank containers for liquid anhydrous ammonia may be filled to 87.5 percent by volume provided the temperature of the anhydrous ammonia being loaded into such tanks is determined to be not lower than 30° F. or provided the filling of such tanks is stopped at the first indication of frost or ice formation on the outside surface of the tank and is not resumed until such frost or ice has disappeared.

NOTE 6: Tanks equipped with fusible plugs must be filled by weight.

NOTE 7: Tanks must be filled by weight.

NOTE 8: Chlorine cargo tank motor vehicles may be shipped only if the contents are to be unloaded at one unloading point.

NOTE 9: This gas may be transported in authorized cargo tanks and portable tanks marked "DISPERSANT GAS," or "REFRIGERANT GAS."

Note 10 [Reserved]

NOTE 11: Before an MC 330 (§ 78.336 of this chapter) cargo tank may be used for the transportation of vinyl fluoride, inhibited, the following requirements must be met: Tanks must be designed for a service temperature of minus 100° F. or below and comply with the requirements for "Low Temperature Operation of the A.S.M.E. Boiler and Pressure Vessel Code, Section VIII, Unfired Pressure Vessels." Tanks must be lagged with an approved insulation material of a thickness so that the thermal conductance is not more than 0.08 B.t.u. per square foot per degree F. differential in temperature per hour. The temperature of vinyl fluoride, inhibited, when cargo tanks are offered in transportation shall not exceed zero degrees F. and the pressure shall not exceed 105 pounds per square inch and the minimum filling density shall not be less than 60%. The shipper shall notify the Bureau of Explosives whenever a shipment is not received by the consignee within 5 days from the date of shipment. Shipments are authorized for transportation by private or contract carrier by motor vehicle only.

NOTE 12: No aluminum, copper, silver, zinc, or alloy of any of these metals shall be used in the cargo tank construction where it can come into contact with the lading.

NOTE 13: All parts of valves and safety devices in contact with contents of tank must be of a metal or other material suitably treated if necessary, which will not cause formation of any acetylides.

(b) **Maximum permitted filling densities for cargo and portable tank containers for transportation of butadiene, inhibited, and liquefied petroleum gas are as follows:**

| Maximum specific gravity of the liquid material at 60° F. | Maximum permitted filling density in percent of the water-weight capacity of the tanks | | Maximum permitted filling density by volume |
|---|---|---|---|
| | 1200 gallons or less | Over 1200 gallons | |
| | *Percent* | *Percent* | |
| 0.473–0.480 | 38 | 41 | |
| 0.481–0.488 | 39 | 42 | |
| 0.489–0.495 | 40 | 43 | |
| 0.496–0.503 | 41 | 44 | See Note 1. |
| 0.504–0.510 | 42 | 45 | |
| 0.511–0.519 | 43 | 46 | |
| 0.520–0.527 | 44 | 47 | |
| 0.528–0.536 | 45 | 48 | |
| 0.537–0.544 | 46 | 49 | |
| 0.545–0.552 | 47 | 50 | |
| 0.553–0.560 | 48 | 51 | |
| 0.561–0.568 | 49 | 52 | |
| 0.569–0.576 | 50 | 53 | |
| 0.577–0.584 | 51 | 54 | See Note 1. |
| 0.585–0.592 | 52 | 55 | |
| 0.593–0.600 | 53 | 56 | |
| 0.601–0.608 | 54 | 57 | |
| 0.609–0.617 | 55 | 58 | |
| 0.618–0.626 | 56 | 59 | |
| 0.627 and over | 57 | 60 | |

NOTE 1: Same filling density as permitted by weight, except when using fixed length dip tube or other fixed maximum liquid level indicators (paragraph (f) of this section), in which case the maximum permitted filling density shall not exceed 97 percent of the maximum permitted filling density by weight contained in the table.

(c) **The loading of liquefied gases into cargo tanks and portable tank containers shall be determined by weight or by suitable liquid level gauging device. In either case the liquid portion of the gas shall not fill the tank at 105° F. if the tank be lagged, nor at 115° F. if the tank be unlagged, except that this requirement shall be waived for the shipment of carbon dioxide and nitrous oxide in tanks (which are required to be equipped with suitable pressure controlling devices) which may be charged to a level corresponding to 95 percent of the volumetric capacity of the tank.**

(1) The vapor pressure (psig) at 115° F. must not exceed the design pressure of the cargo tank or portable tank container.

(d) If the loading of cargo tanks and portable tank containers with liquefied gases is to be determined by weight, the gross weight shall be checked after the filling line is disconnected in each instance. The gross weight shall be calculated from the tank capacity and tare weight set forth on the metal plate required by the specification, and the maximum filling density permitted for the material being loaded into the tank as set forth in the table, paragraph (a) (1) of this section.

(e) If the loading of cargo tanks and portable tank containers with liquefied gases is to be determined by adjustable liquid level device, each tank and each compartment thereof shall have a thermometer well, so that the internal liquid temperature can easily be determined, and the amount of liquid in the tank shall be corrected to a 60° F. basis. Liquid levels shall not exceed a level corresponding to the maximum filling density permitted for the material being loaded into the tank as set forth in the table in paragraph (a) (1) of this section.

(f) When the loading of cargo tanks and portable tank containers with liquefied gases is determined only by fixed length dip tube or other fixed maximum liquid level indicator, the device shall be arranged to function at a level not to exceed the maximum permitted volume prescribed by the table, paragraph (a) (1) of this section. Loading shall be stopped when the device functions.

(g) Containers, the liquid level of which has been determined by means of a fixed length dip tube gauging device, shall not be acceptable for stowage as cargo on vessels in commerce subject to the jurisdiction of the United States Coast Guard. Nothing contained in this section shall be so construed as to prohibit the transportation on car floats or car ferries of motor vehicles laden with containers nor cargo tanks the liquid level of either of which has been determined by means of fixed length dip tube devices.

(h) Each cargo tank and portable tank container, except tanks filled by weight, shall be equipped with one or more of the following gauging devices which indicate accurately the maximum permitted liquid level: (Additional gauging devices may be installed but may not be used as primary controls for filling of cargo tanks and portable tank containers. Gauge glasses shall not be permitted to be installed on any cargo tank or portable tank container).

| Kind of gas | Permitted gauging device |
|---|---|
| Anhydrous ammonia | Rotary tube; adjustable slip tube; fixed length dip tube. |
| Anhydrous dimethylamine | None. |
| Anhydrous monomethylamine. | None. |
| Anhydrous trimethylamine | None. |
| Aqua ammonia solution containing anhydrous ammonia. | Rotary tube; adjustable slip tube; fixed length dip tube. |
| Butadiene, inhibited | Rotary tube; adjustable slip tube; fixed length dip tube. |
| Carbon dioxide, liquefied | Rotary tube; adjustable slip tube; fixed length dip tube. |
| Chlorine | None. |
| Dichlorodifluoromethane | None. |
| Dichlorodifluoromethane and difluoroethane mixture (constant boiling mixture). | None |
| Dichlorodifluoromethane-dichlorotetrafluoroethane mixture. | None. |
| Dichlorodifluoromethane-monofluorotrichloromethane mixture. | None. |
| Difluoroethane | None. |
| Hexafluoropropylene | None. |
| Liquefied petroleum gases | Rotary tube; adjustable slip tube; fixed length dip tube. |
| Methyl chloride | Fixed length dip tube. |
| Methyl mercaptan | Rotary tube; adjustable slip tube; fixed length dip tube. |
| Monochlorodifluoromethane | None. |
| Nitrous oxide | Rotary tube; adjustable slip tube; fixed length dip tube. |
| Sulfur dioxide | Fixed length dip tube. |
| Vinyl chloride | None. |
| Vinyl fluoride, inhibited | None. |

(1) The design pressure of the liquid level gauging devices shall be at least equal to the design pressure of the tank.

(2) All liquid level gauging devices, except on tanks provided with fixed maximum level indicators, shall be legibly and permanently marked in increments of not more than 20 Fahrenheit degrees to indicate the maximum levels to which the tank may be filled with liquid at temperatures above 20° F. except that gauging devices on tanks for carbon dioxide and nitrous oxide may be marked in increments of not more than 25 psig. In the event that it is impracticable to put these markings on the gauging device, this information shall be marked on a suitable plate affixed to the tank in a location adjacent to the gauging device.

(3) Liquid level gauging devices which are so constructed that the outward flow of tank contents exceeds that passed by a No. 54 drill size opening, shall be equipped with excess-flow valves. Exception: Not required on gauging devices when used on tanks in carbon dioxide service.

(4) A fixed-length dip tube gauging device, when used, shall consist of a dip pipe of small diameter equipped with a valve at the outer end, and extending into the tank to a specified fixed length. On horizontally mounted cylindrical tanks the fixed length to which the tube extends into the tank shall be such that the device will function to indicate when the liquid at a point equidistant from the heads of the tank in a vertical plane containing the longitudinal axis of the tank, reaches the maximum level permitted by this section except that on tanks for liquefied petroleum gases the device should be set to function when the liquid reaches the maximum level at 40° F. when charged in accordance with the authorized filling density. On spherical tanks and on vertically mounted cylindrical tanks the fixed length to which the tube extends into the tank shall be such that the device will function to indicate when the liquid at a point on the vertical axis of the tank in its normal position reaches the maximum level permitted by this section except that on tanks for liquefied petroleum gases the device should be set to function when the liquid reaches the maximum level at 40° F. when charged in accordance with the authorized filling density.

(i) Each tank shall be provided with one or more safety devices which, unless otherwise specified, shall be safety relief valves of the spring-loaded type and they shall be arranged to discharge upward and unobstructed to the outside of the protective housing in such a manner as to prevent any impingement of escaping gas upon the tank, except that for chlorine tanks, protective housing shall be as required in § 78.336–10 of this chapter, and safety valve as required in subparagraph (11) of this paragraph.

(1) Safety relief valves on any tank shall be set to start-to-discharge at a pressure not in excess of 110 percent of the design pressure of the tank and shall have a total relieving capacity sufficient to prevent a maximum pressure in the tank of more than 120 percent of the design pressure, using the heat input as determined by Fetterly's formula.[1] The required relieving capacity of safety relief valves for lagged tanks shall be based upon the heat input to a bare tank, unless insulation is covered by a sheet metal jacket of not less than 16-gauge nominal thickness.

(2) The start-to-discharge pressure of safety relief valves shall be not less than the values given in the following table:

| Kind of gas | Minimum start-to-discharge pressure (psig) |
|---|---|
| Anhydrous ammonia | 265. |
| Anhydrous dimethylamine | 150. |
| Anhydrous monomethylamine | 150. |
| Anhydrous trimethylamine | 150. |
| Aqua ammonia solution containing anhydrous ammonia. | 100 |
| Butadiene, inhibited | 90. |
| Carbon dioxide, liquefied | Not specified. |
| Chlorine | 225. |
| Difluoroethane | 150. |
| Dichlorodifluoromethane | 150. |
| Dichlorodifluoromethane and difluoroethane mixture (constant boiling mixture). | 250 |
| Dichlorodifluoromethane-dichlorotetrafluoroethane mixture. | 150. |
| Dichlorodifluoromethane-monofluorotrichloromethane mixture. | 150. |
| Hexafluoropropylene | 250 |
| Liquefied petroleum gases | 90 percent of the design pressure of tank. |
| Methyl chloride | 150. |
| Methyl mercaptan | 100. |
| Monochlorodifluoromethane | 250. |
| Nitrous oxide | Not specified. |
| Sulfur dioxide: | |
| Up to 1,200 gallons water capacity tank. | 120. |
| Over 1,200 gallons water capacity tank. | 110. |
| Vinyl chloride | 150. |
| Vinyl fluoride, inhibited | 250 |

(3) Each safety relief valve shall be plainly and permanently marked with the pressure in psig at which it is set to discharge, with the actual rate of discharge of the device in cubic feet per minute of the gas at 60° F. and atmospheric pressure, and with the manufacturer's name and catalog number. The rated discharge capacity of the device shall be determined at a pressure of 120

[1] Copies of Fetterly's formula may be obtained from the Bureau of Explosives.

percent of the design pressure of the tank.

(4) Connections to safety relief valves shall be of sufficient size to provide the required rate of discharge through the safety relief valves.

(5) Safety relief valves shall be arranged so that the possibility of tampering will be minimized; and if the pressure setting or adjustment is external the safety relief valves shall be provided with suitable means for sealing the adjustment.

(6) No shut-off valves shall be installed between the safety relief valves and the tank except, in cases where two or more safety relief valves are installed on the same tank, a shut-off valve may be used where the arrangement of the shut-off valve or valves is such as always to afford full required capacity flow through at least one safety relief valve.

(7) Safety relief valves shall have direct communication with the vapor space of the tank.

(8) Any portion of liquid piping or hose which at any time may be closed at each end must be provided with a safety relief valve to prevent excessive hydrostatic pressure. This safety relief valve must not have an intervening shut-off valve installed.

(9) Additional restrictions as specified in Notes 1, 2, and 3 of this subparagraph apply to safety relief devices on tanks for carbon dioxide or nitrous oxide.

NOTE 1: The maximum operating pressure in the tank may be regulated by the use of one or more pressure controlling devices, which devices shall not be in lieu of the safety relief valve required in paragraph (i) of this section.

NOTE 2: All safety devices shall be so installed and located that the cooling effect of the contents will not prevent the effective operation of the device.

NOTE 3: In addition to safety relief valves required by paragraph (i) of this section each tank for carbon dioxide may be equipped with one or more frangible disc devices of suitable design set to function at a pressure not exceeding two times the design pressure of the tank.

(10) Subject to conditions of subparagraph (a) (1) of this section for sulfur dioxide optional portable tank 1,000–2,000 pounds water capacity—225 psig, one or more fusible plugs approved by the Bureau of Explosives may be used in lieu of safety relief valves of the spring-loaded type. The fusible plug or plugs shall have total relieving capacity as determined by the use of Fetterly's formula sufficient to prevent a pressure rise in the tank of more than 120 percent of the design pressure. If the tank is over 30 inches long, both ends must have the total specified safety discharge area.

(11) Safety relief valve on chlorine tank motor vehicles shall conform with the standard of The Chlorine Institute, Inc. Dwg. D–13105E, dated April 30, 1958.

(j) Storage containers for liquefied petroleum gas for permanent installation on consumer premises may be shipped by private motor carrier only under the following conditions:

(1) The containers shall comply with the construction requirements of one of the following pressure vessel codes and shall be marked to indicate compliance as specified in the code:

The 1959 Edition of the Unfired Pressure Vessel Code of the A.S.M.E.

The 1956 Edition of the Unfired Pressure Vessel Code of the A.S.M.E.

The 1952 Edition of the Unfired Pressure Vessel Code of the A.S.M.E., no revisions.

The 1950 Edition of the Unfired Pressure Vessel Code of the A.S.M.E., no revisions.

The 1949 Edition of the Unfired Pressure Vessel Code of the A.S.M.E.

The 1951 Edition of the joint Unfired Pressure Vessel Code of the A.P.I. and A.S.M.E., no revisions.

The 1943 Edition of the joint Unfired Pressure Vessel Code of the A.P.I. and A.S.M.E.

(2) Each container shall be equipped with safety devices in compliance with the requirements for safety devices on containers as specified in National Fire Protection Association Pamphlet No. 58, "Standard for the Storage and Handling of Liquefied Petroleum Gases," 1959 edition.

(3) The containers shall be so braced or otherwise secured on the vehicle as to prevent relative motion while in transit. Valves or other fittings shall be adequately protected against injury during transportation. (See § 77.834 (g) of this chapter.)

(4) Except as provided in subparagraph (j) (5) of this paragraph, containers shall not be shipped when charged with liquefied petroleum gas to more than 5 percent of their water capacity.

(5) Storage containers of less than 1042 pounds water capacity (125 gallons) may be shipped when charged with liquefied petroleum gas in compliance with I. C. C. filling density.

(k) For manifolding of cargo tank containers see § 73.301 (f).

### § 73.316 Liquefied hydrogen.

(a) Liquefied hydrogen (minimum 95 percent parahydrogen) must be charged into specification containers as follows:

(1) Spec. 113A60–W–2 (§ 78.279 of this chapter). Tank cars. Each tank car shall have a pressure controlling valve set at a pressure not exceeding 17 psig. The maximum permitted filling density is 6.6 percent.

## Subpart G—Poisonous Articles; Definition and Preparation

### § 73.325 Classes of poisonous articles.

(a) Poisonous articles for the purpose of Parts 71–78 of this chapter are divided into four classes according to degree of hazard in transportation.

(1) Extremely dangerous poison—class A.

(2) Less dangerous poison—class B.

(3) Tear gases or irritating substances—class C.

(4) Radioactive materials—class D.

### § 73.326 Extremely dangerous poisons, class A, poison gas label; definition.

(a) For the purpose of Parts 71–78 of this chapter extremely dangerous poisons, class A, are poisonous gases or liquids of such nature that a very small amount of the gas, or vapor of the liquid, mixed with air is dangerous to life. This class includes the following:

(1) Bromacetone.

(2) Cyanogen.

(3) Cyanogen chloride containing less than 0.9 percent water.

(4) Diphosgene.

(5) Ethyldichlorarsine.

(6) Hydrocyanic acid (see Note 1 of this paragraph).

(7) Lewisite.

(8) Methyldichlorarsine.

(9) Mustard gas.

(10) Nitrogen peroxide (tetroxide).

(11) Phenylcarbylamine chloride.

(12) Phosgene (diphosgene).

(13) Nitrogen tetroxide-nitric oxide mixtures containing up to 33.2 percent weight nitric oxide.

NOTE 1: Diluted solutions of hydrocyanic acid of not exceeding 5 percent strength are classed as poisonous articles, class B (see § 73.343).

(b) Poisonous gases or liquids, class A, as defined in paragraph (a) of this section, except as provided in § 73.331 must not be offered for transportation by rail express.

### § 73.327 Packing.

(a) Cylinders used must comply with the provisions of §§ 73.34 and 73.301(g).

(b) Closing and cushioning. All containers must be tightly and securely closed. Inside containers must be cushioned as prescribed, or in any case when necessary to prevent breakage or leakage.

(c) No class A poisons in cargo tanks. No "extremely dangerous poison, class A," may be loaded into or transported in any cargo tank.

(d) It shall not be permissible to transport class A poison if there be any interconnecting means of any character between the containers.

### § 73.328 Poisonous gases and liquids not specifically provided for.

(a) Poisonous gases and liquids, as defined in § 73.326, other than those for which special requirements are prescribed, must be packed in specification containers as follows:

(1) Spec. 33[1] or 3D (§ 78.41 of this chapter). Metal cylinders of not over 125 pounds water capacity (nominal). Gaskets if used between the protection cap and neck of cylinder must be renewed for each shipment even though they may appear to be in good condition. Cylinders not fitted with valve protection extension ring must be packed in wooden boxes complying as to construction, marking, and labeling, with the requirements of § 73.25.

### § 73.329 Bromacetone; chlorpicrin and methyl chloride mixtures; chlorpicrin and nonflammable, nonliquefied compressed gas mixtures.

(a) Bromacetone, when offered for transportation by carriers by rail freight, highway, or water, must be packed in specification containers as follows:

(1) As prescribed in § 73.328.

(2) Spec. 15A, 15B, 15C, or 16A (§§ 78.168, 78.169, 18.170, or 78.185 of this chapter). Wooden boxes with inside glass bottles or tubes in hermetically sealed metal cans in corrugated fiberboard cartons, spec. 2C (§ 78.22 of this chapter). Bottles must contain not over 1 pound of liquid each, must be filled to not over

[1] Use of existing cylinders authorized, but new construction not authorized.

95 percent capacity, must be tightly and securely closed, and must be cushioned in cans with at least ½ inch of absorbent material. Cans must be made of metal at least 32 gauge United States standard. Total amount of liquid in outside box must not exceed 24 pounds.

(b) *Chlorpicrin and methyl chloride mixtures.* Chlorpicrin and methyl chloride mixtures, in addition to containers prescribed in § 73.328, when offered for transportation by carriers by rail freight, highway, or water, may be shipped in specification containers as follows:

(1) Spec. 3A, 3AA, 3B, 3C, 3E, 4A, 4B, 4BA, or 4C (§§ 78.36, 78.37, 78.38, 78.40, 78.42, 78.49, 78.50, 78.51, or 78.52 of this chapter) not over 250 pounds water capacity (nominal). Valves or other closing devices must be protected, to prevent injury in transit, by screw-on metal caps or by packing the cylinders in strong boxes or crates. Cylinders having a wall thickness of less than 0.10 inch must be packed in boxes or crates (see § 73.25).

(c) *Chlorpicrin and nonflammable, nonliquefied compressed gas mixtures.* Chlorpicrin and nonflammable, nonliquefied compressed gas mixtures, in addition to containers prescribed in § 73.328, when offered for transportation by carriers by rail freight, highway, or water, must be shipped in specification containers as follows:

(1) Spec. 3A, 3AA, 3B, 3C, 3E, 4A, 4B, 4BA, or 4C (§§ 78.36, 78.37, 78.38, 78.40, 78.42, 78.49, 78.50, 78.51, or § 78.52 of this chapter) not over 250 pounds water capacity (nominal). Valves or other closing devices must be protected, to prevent injury in transit, by screw-on metal caps or by packing the cylinders in strong boxes or crates. Cylinders having a wall thickness of less than 0.10 inch must be packed in boxes or crates (see § 73.25).

### § 73.330 Chemical ammunition.

(a) Projectiles, shells, bombs, and grenades containing poisonous gases or liquids, class A, § 73.326, but not equipped or packed with ignition elements, bursting charges, detonating fuzes, or explosive components, may only be shipped by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government. Shipments must be packed and marked as required by their regulations, and packages must be labeled with the "Poison Gas" label and marked "NON-EXPLOSIVE" and with the name of the contents. (See §§ 73.53 (r) and 73.59 for explosive chemical ammunition.)

(b) Chemical ammunition containing poisonous liquids or gases, class A, must not be offered for transportation by rail express.

### § 73.331 Gas identification sets.

(a) Gas identification sets containing poisonous liquids and gases, class A, and poisonous articles, class C, and chlorine when offered for transportation by carriers by rail freight, rail express, highway, or water must be packed in spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes, under the following conditions:

(1) Gas identification sets containing poisonous liquids and gases, class A, and poisonous articles, class C, may be shipped in amounts not exceeding 5 cubic centimeters, if a liquid, or 5 grams, if a solid, when mixed with or absorbed in activated charcoal or silica gel, or other absorbent medium, and packed in strong glass bottles of not less than 4 fluid ounces capacity. The poisonous gases, class A, and chlorine may be shipped if the gas itself is absorbed in activated charcoal or silica gel, or other absorbent medium, this material to be filled into 4 ounce bottles as above; each bottle as herein specified must be surrounded with appropriate absorbent cushioning material, and inclosed in a hermetically sealed metal can; each can must be surrounded on all sides by at least 1 inch of dry, fine sawdust or wood pulp; the cans must be packed in an outside wooden box, spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter); the bottles must be closed with ground-in glass stoppers securely fastened; the cushioning material around the bottle must be at least 1 inch thick; the cans must be made from metal of thickness not less than 30 gauge, United States standard; and there must be not more than a total of 100 grams or cubic centimeters, or a combination of both, in each outside wooden box.

(b) Gas identification sets containing poisonous liquids or gases, class A and class C, when offered for transportation by carriers by rail freight, rail express, highway, or water must be packed for shipment as follows:

(1) The liquids or liquefied gases in hermetically sealed glass tubes containing not to exceed 40 cubic centimeters each; each tube securely cushioned and packed in an individual mailing tube with screw-thread metal cover; not more than 12 of such mailing tubes, cushioned with corrugated fiberboard, packed in a closed fiberboard container; and not to exceed 4 such fiberboard containers, containing an aggregate of not to exceed 48 glass tubes, cushioned and packed in an outside steel cylinder of not less than 0.145-inch wall thickness, which is closed by a plate, bolted to a flange, welded to cylinder wall. Suitable gasket shall be placed between flange and head plate, and closure shall be such as to prevent leakage of any gas.

(c) Gas identification training sets containing poisonous liquids, class A, and poisonous articles, class C, when offered for transportation by carriers by rail freight, rail express, highway, or water must be packed for shipment as follows:

(1) The poisonous liquid, class A, and poisonous article, class C, in amounts not exceeding 5 cubic centimeters, if a liquid, or 20 grams, if a solid, when mixed with or absorbed in activated charcoal, silica gel, crepe rubber, or other absorbent medium, must be packed in strong glass bottles of not less than 2 fluid ounces capacity, equipped with a polyethylene liner; each bottle as herein specified must have a metal screw cap closure, equipped with a built-in compression type spring and an insert in the opening of the bottle to match so that when tightened an airtight seal is obtained. Twelve bottles, containing articles as described in this paragraph and not exceeding 100 cubic centimeters or grams, or a combination of both, shall be placed in a modified styrene plastic carrying case, in three rows of four bottles each and fitted with a fiberboard cell or separator. The void space around the individual bottles, and around all interior sides of the carrying case, shall be filled with dry, fine sawdust or vermiculite. A sheet of sponge rubber shall be fitted to the inside of the top and bottom of the carrying case to provide additional cushioning and insure a snug fit of the bottles when the top is secured. The carrying case shall be fitted into a snug fitting fiberboard box, domestic type. The case shall then be packed in a nailed wooden box, spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter), which shall be fitted with a waterproof case liner.

### § 73.332 Hydrocyanic acid, liquid (prussic acid) and hydrocyanic acid liquefied.

(a) Hydrocyanic acid, liquid (prussic acid) and hydrocyanic acid liquefied, must be packed in specification containers as follows:

(1) As prescribed in § 73.328.

(2) Spec. 3A480, 3AA480, or 3A480X (§§ 78.36, 78.37, or 78.43 of this chapter). Metal cylinders of not over 278 pounds water capacity (nominal); valve protection cap must be used and be at least 3/16 inch thick, gas-tight, with 3/16 inch faced seat for gasket and with United States standard form thread; the cap must be capable of preventing injury or distortion of the valve when it is subjected to an impact caused by allowing cylinder, prepared as for shipment, to fall from an upright position with side of cap striking a solid steel object projecting not more than 6 inches above floor level.

(b) Cylinders must be charged with not more than 0.6 pound of liquid for 1-pound water capacity of cylinder. Each filled cylinder must be tested for leakage before shipment and must show absolutely no leakage; this test must consist in passing over the closure of the cylinder, without the protection cap attached, a piece of Guignard's sodium picrate paper to detect any escape of hydrocyanic acid from the cylinder. Other equally efficient test methods may also be used in lieu of the picrate paper.

(c) Liquid hydrocyanic acid completely absorbed in inert material may also be shipped in specification containers as follows:

(1) Spec. 15A (§ 78.168 of this chapter). Wooden boxes with inside containers consisting of metal cans, spec. 2N (§ 78.32 of this chapter), not over 14 pounds water capacity each. The liquid contents of each can must not exceed 0.33 pound of liquid for 1-pound water capacity of the can. Each can containing 4 ounces or more of liquid must be fitted with fiber caps not less than 0.08 inch thick flanged about 1 inch and fitting snugly over each end of the can. Each can must be tested for leakage after being filled and again after being maintained at ordinary room temperature for a period of at least three weeks. Each can must have its outer surface protected against rust by the use of enamel or lac-

quer, or each can must be completely wrapped in waterproof paper.

(2) The box lining must consist of not more than two pieces of waterproof paper, one piece completely surrounding the contents and running lengthwise of the box, and the other piece completely surrounding the contents and running crosswise of the box. In each instance, the wrapping must overlap at least 4 inches.

(3) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, constructed in accordance with requirements for a gross weight of 65 pounds but having a gross weight of not over 70 pounds, with inside containers consisting of metal cans, spec. 2N (§ 78.32 of this chapter). The liquid contents of each can must not exceed 0.33 pound of liquid for 1-pound water capacity of the can and the total weight of liquid in each can must not exceed 41 ounces. Each can must be tested for leakage after being filled and again after being maintained at ordinary room temperature for a period of at least three weeks. Each can must have its outer surface protected against rust by the use of enamel or lacquer. Not more than twelve cans shall be packed in the outside fiberboard box and each can shall be separated from the other by 200-pound minimum test fiberboard partitions. Each box shall be provided with 200-pound minimum test fiberboard liner and top and bottom pads of the same material. In addition to the required closure of the boxes, two metal straps measuring ½ inch by .015 inch must be applied around the girth of each box.

(d) Spec. 105A500–W or 105A600–W (§§ 78.288 or 78.289 of this chapter). Tank cars. Tank must be restenciled 105A300–W and be equipped with safety valves of the type and size used on spec. 105A300–W (§ 78.286 of this chapter) tank car. Tank car tank must be equipped with approved dome fittings and safety devices, and with cork insulation at least 4 inches in thickness. Tank must be stenciled on both sides in letters not less than 2 inches high "HYDROCYANIC ACID ONLY." Written procedure covering details of tank car appurtenances, dome fittings and safety devices, and marking, loading, handling, inspection, and testing practices shall be filed with and approved by the Bureau of Explosives before any tank car is offered for transportation of hydrocyanic acid. The maximum permitted filling density is 63 percent of the water capacity of the tank.

**§ 73.333 Phosgene or diphosgene.**

(a) Phosgene or diphosgene must be packed in specification containers as follows:

(1) As prescribed in § 73.328; filling density (see § 73.308, Note 12) must not exceed 125 percent and a cylinder must not contain more than 150 pounds of phosgene.

(2) Spec. 106A500,[1] or 106A500–X (§§ 79.300, 79.301 of this chapter). Tank cars. Each container must be equipped with valve protection caps, gastight, which must be approved by the Bureau of Explosives; containers must not be equipped with safety devices of any type; containers must be filled so that they will not be liquid full at 130° F. Authorized only for phosgene.

Note 1: Tanks complying with ICC–106A (§ 78.275 of this chapter) specification may be transported in or on motor vehicles and in the manner authorized in § 77.840(c) of this chapter, provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting.

(b) Each filled cylinder must be tested for leakage before shipment and must show absolutely no leakage; this test must consist in immersing the cylinder and valve, without the protection cap attached, in a bath of water at a temperature of approximately 150° F. for at least thirty minutes, during which time frequent examinations must be made to note any escape of gas. The valve of the cylinder must not be loosened after this test and before shipment.

**§ 73.334 Hexaethyl tetraphosphate, parathion, tetraethyl dithio pyrophosphate, tetraethyl pyrophosphate, or other class B poison organic phosphate mixtures, n.o.s., mixed with compressed gas.**

(a) Hexaethyl tetraphosphate, parathion, tetraethyl dithio pyrophosphate, tetraethyl pyrophosphate, or other class B poison organic phosphate mixtures, n.o.s., mixed with compressed gas, containing not more than 10 percent by weight of hexaethyl tetraphosphate, parathion, tetraethyl dithio pyrophosphate, tetraethyl pyrophosphate, or other class B poison organic phosphate mixtures, n.o.s. must be packed in specification containers as follows:

(1) Spec. 3A300, 3AA300, 3B300, 4A300, 4B240, or 4BA240 (§§ 78.36, 78.37, 78.38, 78.49, 78.50, or 78.51, of this chapter). Metal cylinders, charged with not more than 5 pounds of the mixture and to a maximum filling density of 80 percent of the water capacity. Cylinders must not be equipped with eduction tubes or fusible plugs. Valves must be of a type acceptable to the Bureau of Explosives.

(b) Cylinders must be packed in strong wooden boxes with valves or other closing devices protected from injury, with not more than twelve cylinders in one outside wooden box. A single-trip outside fiberboard box may be used when not more than four such cylinders are to be shipped in one outside container. Valves must be adequately protected. Box and valve protection must be of strength sufficient to protect all parts of inside containers and valves from deformation or breakage resulting from a drop of at least six feet onto a concrete floor, impacting at the weakest point.

**§ 73.335 Police grenades.**

(a) Police grenades containing poisonous gases or liquids, class A, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Metal-strapped wooden boxes. Each grenade must be individually inclosed in a corrugated fiberboard carton, spec. 2C (§ 78.22 of this chapter), and when so packed must be able to withstand without leakage a drop of 5 feet on concrete. Grenades must consist of copper shell containing securely closed glass bottles or tubes containing not over 50 cubic centimeters of poisonous material. Each outside container may contain not over 24 grenades and weigh not over 75 pounds gross.

(b) Pending approval by the Commission of regulations classifying the numerous devices within the general descriptions of this section, and providing appropriate restrictions to be observed in the transportation thereof, no shipment of packages containing articles under this section shall be made until samples thereof have been examined by the Bureau of Explosives or by other competent testing laboratory in the presence of representative of the Bureau of Explosives, and the shipment is shown to possess such resistance to shocks of transportation and protection against leakage of contents as are afforded by standard types of packages described in Part 78 of this chapter, and the packages are labeled or marked to show compliance with this part.

**§ 73.336 Nitrogen dioxide, liquid, nitrogen peroxide, liquid, and nitrogen tetroxide, liquid.**

(a) Nitrogen dioxide, liquid, nitrogen peroxide, liquid, and nitrogen tetroxide, liquid must be packed in specification containers as follows:

(1) As prescribed in § 73.328.

(2) Spec. 3A480 or 3AA480 (§ 78.36 or § 78.37 of this chapter) or 25.[1] Metal cylinders with valve removed; valve opening to be closed by means of a solid metal plug with tapered thread properly luted to prevent leakage; valve protection cap must be used and be at least 5/16 inch thick, gastight, with 5/16 inch faced seat for gasket and with United States standard form thread. Use of this container will be permitted because of the present emergency and until further order of the Commission.

(3) Spec. 106A500,[2] or 106A500–X (§§ 79.300, 79.301 of this chapter). Tank cars. Each container must be equipped with valve protection caps, gastight, which must be approved by the Bureau of Explosives; containers must not be equipped with safety devices of any type; containers must be filled so that they will not be liquid full at 130° F.

Note 1: Tanks complying with ICC–106A (§ 78.275 of this chapter) specification may be transported in or on motor vehicles and in the manner authorized in § 77.840(c) of this chapter, provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting.

(4) Spec. 105A500–W (§§ 79.100, 79.101 of this chapter). Tank cars. Authorized for nitrogen tetroxide only. Tanks must be lagged with not less than

[1] Use of existing tank cars authorized, but new construction not authorized.

[2] Use of existing cylinders authorized, but new construction not authorized.

a four-inch thickness of cork. All valves and fittings shall be protected by a securely attached cover made of metal not subject to deterioration by the lading, and all valve openings, except the safety valve, shall be fitted with screw plugs or caps to prevent leakage in the event of valve failure. Safety valve must be equipped with an approved stainless steel or platinum frangible disc. Tank must be stenciled on both sides in letters not less than 2 inches high "NITROGEN TETROXIDE ONLY." Written procedure covering details of tank car appurtenances, dome fittings and safety devices, and marking, loading, handling, inspection, and testing practices shall be filed with and approved by the Bureau of Explosives before any tank car is offered for transportation of nitrogen tetroxide.

**§ 73.337 Nitric oxide.**

(a) Nitric oxide must be packed in specification containers as follows:

(1) Spec. 3A, 3AA, or 3E1800 (§ 78.36, § 78.37, or § 78.42 of this chapter) cylinders designed and marked for a service pressure of 1800 pounds per square inch, or higher, charged to a pressure of not more than 750 pounds per square inch at 70° F. Cylinders must be equipped with a valve of stainless steel and valve seat of material which will not be deteriorated by contact with nitric oxide or nitrogen dioxide. Containers or valves must not be equipped with safety devices of any type. Valve outlets must be sealed by a solid threaded cap or plug and an inert gasketing material.

(2) Spec. 3E1800 (§ 78.42 of this chapter) cylinders must be packed in strong wooden boxes of such design as to protect valves from injury or accidental functioning under conditions incident to transportation. Each outside shipping container must be plainly marked "inside containers comply with prescribed specifications".

(3) Spec. 3A and 3AA (§§ 78.36 and 78.37 of this chapter) cylinders must have their valves protected by metal caps securely attached to the cylinders and of sufficient strength to protect the valves from injury during transit, or by packing in strong wooden boxes of such design as to protect valves from injury or accidental functioning under conditions incident to transportation. Each outside shipping container must be plainly marked "inside containers comply with prescribed specifications".

**§ 73.338 Nitrogen tetroxide-nitric oxide mixtures containing up to 33.2 percent weight nitric oxide.**

(a) Nitrogen tetroxide-nitric oxide mixtures containing up to 33.2 percent weight nitric oxide must be packed in specification containers as follows:

(1) As prescribed in § 73.328.

(2) Spec. 3A480 or 3AA480 (§ 78.36 or § 78.37 of this chapter). Metal cylinders with valve removed; valve opening to be closed by means of a solid metal plug with tapered thread properly luted to prevent leakage; valve protection cap must be used and be at least 3/16 inch thick, gastight, with 3/16 inch faced seat for gasket and with United States standard form thread.

(3) Spec. 106A500,[1] or 106A500-X (§§ 79.300, 79.301 of this chapter). Tank cars. Each container must be equipped with valve protection caps, gas-tight, which must be approved by the Bureau of Explosives; containers must not be equipped with safety devices of any type; containers must be filled so that they will not be liquid full at 130° F.

NOTE 1: Tanks complying with ICC-106A (§ 78.275 of this chapter) specification may be transported in or on motor vehicles and in the manner authorized in § 77.840(c) of this chapter, provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting.

(4) Spec. 105A500-W (§§ 79.100, 79.101 of this chapter). Tank cars. Tanks must be lagged with not less than a four-inch thickness of cork. All valves and fittings shall be protected by a securely attached cover made of metal not subject to deterioration by the lading and all valve openings, except the safety valve, shall be fitted with screw plugs or caps to prevent leakage in the event of valve failure. Safety valve must be equipped with an approved stainless steel or platinum frangible disc. Tank must be stenciled on both sides in letters not less than 2 inches high "NITROGEN TETROXIDE-NITRIC OXIDE MIXTURES ONLY." Written procedures covering details of tank car appurtenances, dome fittings and safety devices, and marking, loading, handling, inspection, and testing practices shall be filed with and approved by the Bureau of Explosives before any tank car is offered for transportation of nitrogen tetroxide-nitric oxide mixtures.

**§ 73.343 Less dangerous poisons, class B, liquid or solid, poison label; definition.**

(a) For the purposes of Parts 71–78 of this chapter and except as otherwise provided in this part class B poisons are substances, liquids or solids (including pastes and semi-solids), other than classes A, C, or D poisons, which are known to be so toxic to man as to afford a hazard to health during transportation, or which, in the absence of adequate data on human toxicity, are presumed to be toxic to man because they fall within any one of the following categories when tested on laboratory animals:

(1) *Oral toxicity.* Those which produce death within 48 hours in half or more than half of a group of 10 or more white laboratory rats weighing 200 to 300 grams at a single dose of 50 milligrams or less per kilogram of body weight, when administered orally.

(2) *Toxicity on inhalation.* Those which produce death within 48 hours in half or more than half of a group of 10 or more white laboratory rats weighing 200 to 300 grams, when inhaled continuously for a period of one hour or less at a concentration of 2 milligrams or less per liter of vapor, mist, or dust, provided such concentration is likely to be encountered by man when the chemical product is used in any reasonable foreseeable manner.

[1] Use of existing tank cars authorized, but new construction not authorized.

(3) *Toxicity by skin absorption.* Those which produce death within 48 hours in half or more than half of a group of 10 or more rabbits tested at a dosage of 200 milligrams or less per kilogram body weight, when administered by continuous contact with the bare skin for 24 hours or less.

(b) The foregoing categories shall not apply if the physical characteristics or the probable hazards to humans as shown by experience indicate that the substances will not cause serious sickness or death. Neither the display of danger or warning labels pertaining to use nor the toxicity tests set forth above shall prejudice or prohibit the exemption of any substances from the provisions of Parts 71–78 of this chapter.

**§ 73.344 Packing for class B poisons, liquid.**

(a) Closing and cushioning. All containers must be tightly and securely closed. Inside containers must be cushioned as prescribed, or in any case when necessary to prevent breakage or leakage.

(b) *Outage.* Outage for containers of liquid poison for transportation by carriers by rail freight, rail express, highway, or water must be as follows:

(1) Containers must not be entirely filled. Sufficient interior space must be left vacant to prevent leakage or distortion of containers due to the expansion of the contents from increase of temperature during transit.

(2) The proper vacant space (outage) in a tank car or other shipping container depends on the coefficient of expansion of the liquid and the maximum increase of temperature to which it will be subjected in transit. Outage must be calculated to the total capacity of the container.

(3) Liquid poison must not be loaded into domes of tank cars.

(4) In tank cars, outage must be calculated to percentage of the total capacity of the tank, i. e., shell and dome capacity combined. If the dome of the tank car does not provide sufficient outage, then vacant space must be left in the shell to make up the required outage.

(5) The outage for tank cars must not be less than 1 percent.

(6) No cargo tank or compartment thereof used for the transportation of any liquid poison shall be completely filled; sufficient space shall be left vacant in every case to prevent leakage from or distortion of any such cargo tank by expansion of the contents due to rise in temperature in transit, and such free space (outage) shall be sufficient in every case so that such cargo tank shall not become entirely filled with the liquid at 130° F.

**§ 73.345 Exemptions for poisonous liquids, class B.**

(a) Poisonous liquids, class B, as defined in § 73.343, except those for which no exemptions are provided as indicated by the "No exemption" statement in § 72.5 of this chapter, or as provided for in § 73.359(c), in tightly closed inside containers, securely cushioned when necessary to prevent breakage and

packed as follows, are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(1) In glass or earthenware containers not over 1 quart capacity each, or in metal containers or polyethylene bottles not over 1 gallon capacity each, packed in strong outside wooden boxes or barrels.

(2) In glass or earthenware containers not over 1 pint capacity each, or in metal or polyethylene containers not over 1 quart capacity each, packed in strong outside fiberboard boxes.

**§ 73.346 Poisonous liquids not specifically provided for.**

(a) Poisonous liquids as defined in § 73.343, other than those for which special requirements are prescribed, must be packed in specification containers of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein, as follows:

(1) Spec. 5, 5A, 5B, or 5C (§§ 78.80, 78.81, 78.82, or 78.83 of this chapter). Metal barrels or drums, with openings not exceeding 2.3 inches in diameter.

(2) Spec. 17C or 17E (§§ 78.115 or 78.116 of this chapter). Metal drums (single-trip containers), with openings not exceeding 2.3 inches in diameter.

(3) Spec. 37B (§ 78.132 of this chapter). Metal drums (single-trip containers), welded side seams, openings not over 2.3 inches in diameter, capacity not over 10 gallons.

(4) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter). Metal drums (single-trip containers), with welded side seams, not over 5 gallons; authorized for pastes only.

(5) Spec. 10A, 10B, or 10C (§§ 78.155, 78.156, or 78.157 of this chapter). Wooden barrels or kegs.

(6) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs with glass or earthenware inside containers, not over 1 gallon capacity each, or with metal inside containers not over 2 gallons capacity each.

(7) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with glass or earthenware inside containers not over 1 quart capacity each, or with metal inside containers not over 1 gallon capacity each. Packages containing glass or earthenware containers must not weigh over 65 pounds gross.

(8) Spec. 12D (§ 78.207 of this chapter). Fiberboard boxes with inside container which must be glass or earthenware not over one gallon each; authorized for not more than 75 pounds gross weight; not to contain more than 4 such inside containers if their capacity is greater than 5 pints each. Use of this container will be permitted because of the present emergency and until further order of the Commission.

(9) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass or earthenware inside containers not over 1 gallon capacity each, except that inside containers up to 3 gallons are authorized when only one is packed in each outside container; or with metal inside containers, not over 10 gallons capacity each.

(10) Spec. 103,[1] 103–W, 103A,[1] 103AL–W, 103A–W, 104,[1] 104–W, 105A100,[1] 105A100–W, 111A60AL–W, 111A60–F–1, 111A60–W–1, 111A100–F–2, 111A100–W–2, 111A100–W–3, 111A100–W–4, or ARA–IV–A[1] (§§ 79.100, 79.101, 79.200, 79.201 of this chapter). Tank cars.

(11) Cylinders as prescribed for any compressed gas, except acetylene, are also authorized.

(12) Spec. MC 300, MC 301,[2] MC 302, MC 303, MC 304, MC 305, MC 310, or MC 311 (§ 78.321, 78.323, 78.324, 78.325, 78.326, 78.330 or 78.331 of this chapter). Tank motor vehicles.

(13) Spec. 1A, 1D, or 1E (§§ 78.1, 78.4, or 78.7 of this chapter). Glass carboys in wooden boxes or plywood drums.

(14) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with not more than one inside glass container of not over 1 gallon capacity, securely cushioned. Completed package, with glass container filled with water, when closed for shipment, must be capable of withstanding six four-foot drops onto solid concrete in the order bottom, four sides, and top without breakage.

(15) Spec. 21C (§ 78.224 of this chapter). Fiber drums, with inside glass containers not over one gallon capacity each.

(16) Spec. 42B, 42C, or 42D (§§ 78.107, 78.108, or 78.109 of this chapter). Aluminum drums.

(17) Spec. 42E (§ 78.136 of this chapter). Aluminum drums (single-trip).

(18) Spec. 15P or 22C (§ 78.182 or § 78.198 of this chapter). Glued plywood or wooden box, or plywood drum as prescribed by § 78.198–2(a) of this chapter, with inside spec. 2T (§ 78.21 of this chapter) polyethylene container.

(19) Spec. 37P (§ 78.133 of this chapter). Steel drums, not over 5 gallons capacity, with polyethylene liner (nonreusable container). Drums exceeding 1 gallon capacity must be constructed of at least 24-gauge metal. Hole in steel drum body must be suitably plugged. Authorized only for materials that will not react with polyethylene and result in container failure.

(20) Spec. 6D (§ 78.102 of this chapter). Cylindrical steel overpack with inside spec. 2S (§ 78.35 of this chapter) polyethylene container. Authorized only for materials that will not react with polyethylene and result in container failure.

(21) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with not more than one inside glass bottle not over 1-gallon capacity. Shipper must have established that the completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(22) Spec. 29 (§ 78.226 of this chapter). Mailing tubes, with polyethylene bottles not over 2 quarts capacity each.

(23) Spec. 42G (§ 78.111 of this chapter). Aluminum drums.

(24) Spec. 12P (§ 78.211 of this chapter). Fiberboard boxes with inside spec. 2U (§ 78.24 of this chapter) polyethylene containers not over 5 gallons capacity each. Wire staples are not authorized for assembly or closure of boxes, except when polyethylene container is completely enclosed in inside boxes free of wire staples or other projections, that could cause failures.

(25) Spec. 16A (§ 78.185 of this chapter). Wirebound wooden box (see § 78.185–22 of this chapter) with inside specification 2U (§ 78.24 of this chapter) polyethylene container. The polyethylene container shall be separated from the wooden box by a complete corrugated fiberboard liner and top and bottom pads.

(26) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside polyethylene bottles having a minimum wall thickness of 0.015 inch and provided with screw-cap closures, not over one gallon capacity each. Each bottle shall be enclosed in a box constructed of at least 200-pound test (Mullen or Cady) corrugated fiberboard and not more than four such boxes shall be packed in one outside specification shipping container.

**§ 73.347 Aniline oil.**

(a) Aniline oil must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with metal inside containers not over 10 gallons capacity each, or glass bottles not over 1 pound capacity each. Not more than 25 of these botles shall be packed in any outside container.

NOTE 1: Because of the present emergency and until further order of the Commission, glass bottles not over 5 pints capacity each and not more than six of these bottles packed in one outside container are authorized.

(2) Spec. 103,[1] 103–W, 103A,[1] 103A–W, 111A60–F–1, 111A60–W–1, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars.

(3) Spec. MC 300, MC 301,[2] MC 302, MC 303, or MC 305 (§ 78.321, 78.323, 78.324 or 78.326 of this chapter). Tank motor vehicles.

(4) Spec. 5, 5A, or 5B (§§ 78.80, 78.81, or 78.82 of this chapter). Metal barrels or drums. Net weight in 110 gallon drums must not exceed 915 pounds.

(5) Spec. 17C (§ 78.115 of this chapter). Metal drums (single-trip).

(6) Spec. 17E (§ 78.116 of this chapter). Metal drums (single-trip) not over 5 gallons capacity each.

(7) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with metal inside containers not over 1 gallon capacity each; not to contain more than 4 such inside containers if their capacity is greater than 5 pints each.

(8) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles or metal containers not over 1 gallon capacity each. Not more than four inside containers having capacity of 1 gallon each, shall be packed in one outside container. Shipper must have

[1] Use of existing tank cars authorized, but new construction not authorized.

[2] Use of existing cargo tanks authorized, but new construction not authorized.

established that completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(b) Openings in metal barrels or drums must not exceed 2.3 inches in diameter.

(1) Gaskets not less than one-eighth inch thick must be used at bung and filling holes. Gaskets must be made of hard fiber impregnated with glycerin, metal-covered cork, impregnated asbestos sheets, or metal-covered asbestos.

(c) Filled drums must be so placed that bungs will be subjected to hydrostatic head of oil contained therein for a period of not less than 12 hours.

(1) The exterior of filled drums must be carefully examined for evidence of aniline oil, any traces of which must be removed by washing off with water or, preferably, weak acetic acid. The space between rolling hoops immediately around the bung should be painted to aid in the detection of leaks at this point.

(d) All returnable drums must bear the following notice, "PREVENT DAMAGE TO FOODSTUFFS OR OTHER FREIGHT. DRAIN THIS DRUM THOROUGHLY, TIGHTEN BUNGS, WITH GASKET, SECURELY IN PLACE BEFORE RETURNING. USE NEW GASKETS WHEN NECESSARY. ANILINE OIL STAINS ON THE OUTSIDE OF DRUMS SHOULD BE WASHED OFF WITH WATER OR, PREFERABLY, WEAK ACETIC ACID", shellacked to head of drum near the consignee's name and address.

**§ 73.348 Arsenic acid.**

(a) Arsenic acid must be packed in specification containers as follows:

(1) As prescribed in § 73.346. When shipped in metal barrels or drums, or tank motor vehicles or tank cars, without lead lining, the arsenic acid must contain not over 0.05 percent nitric acid.

(2) Spec. 1A, 1C, or 1D (§§ 78.1, 78.3, or 78.4 of this chapter). Glass carboys in boxes or kegs which must be closed, and when reused must be reconditioned and tested, as provided in the specification.

(3) Spec. 12A or 12B (§ 78.210 or 78.205 of this chapter). Fiberboard boxes with inside high-density polyethylene bottles having minimum wall thickness of 0.015 inch with screw-cap closures, not over 1 gallon capacity each. Spec. 12A fiberboard boxes shall have not more than four inside polyethylene bottles which shall be packed to provide a snug fit. Spec. 12B fiberboard boxes shall contain not more than one inside polyethylene bottle and not more than four such boxes shall be overpacked in a strong outside fiberboard box under provisions of § 73.25.

**§ 73.349 Carbolic acid (phenol) liquid.**

(a) Carbolic acid (phenol) liquid (liquid tar acid containing over 50 percent benzo-phenol), must be packed in specification containers as follows:

(1) As prescribed in § 73.346.

(2) Specification 1A, 1C, or 1D (§§ 78.1, 78.3, or 78.4 of this chapter). Glass carboys in boxes or kegs, which must be closed, and when reused must be reconditioned and tested, as provided in the specification.

(3) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 5-pints capacity each. Not more than 6 inside glass bottles of 5-pints capacity each shall be packed in one outside container. Shipper must have established that the completed package meets test requirements prescribed by § 78.210–10 of this chapter.

**§ 73.350 Chemical ammunition.**

(a) Chemical ammunition consisting of projectiles, shells, bombs, grenades and other containers filled with gases, liquids, or chemicals, class B, poison, without ignition elements, bursting charges, detonating fuzes, or other explosive components, must be packed for shipment in strong outside wooden or metal boxes. Boxes must be marked with name of contents and labeled as prescribed by this part for gases, liquids, or chemicals contained therein.

(b) Chemical ammunition, when shipped as such, must not be equipped or packed with explosive or ignition elements. (See §§ 73.53 (r) and 73.59 for explosive chemical ammunition.)

**§ 73.351 Hydrocyanic acid solutions.**

(a) Hydrocyanic acid solutions must be in glass bottles not over 1 pound capacity each for solutions of not over 5 percent strength and not over 5 pints capacity each for solutions of not over 2 percent strength and must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes.

(2) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs.

**§ 73.352 Liquid sodium or potassium cyanide.**

(a) Liquid sodium or potassium cyanide must be packed in specification containers as follows:

(1) Spec. 5, 5A, or 5B (§§ 78.80, 78.81, or 78.82 of this chapter). Metal barrels or drums without galvanizing inside, with openings not exceeding 2.3 inches in diameter.

(2) Spec. 17E or 37B (§ 78.116 or § 78.132 of this chapter). Metal drums (single-trip), with welded side seams, with openings not exceeding 2.3 inches in diameter.

(3) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside glass or earthenware containers not over 1 gallon capacity each, or inside metal containers not over 10 gallons capacity each, and without galvanizing.

(4) Spec. 103,[1] 103–W, 103A,[1] 103A–W, 111A60–F–1, 111A60–W–1, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars.

(5) Spec. MC 300, MC 301,[2] MC 302, MC 303 or MC 305 (§ 78.321, 78.323, 78.324, or 78.326 of this chapter). Tank motor vehicles.

[1] Use of existing tank cars authorized, but new construction not authorized.

[2] Use of existing cargo tanks authorized, but new construction not authorized.

**§ 73.353 Methyl bromide, liquid (bromomethane), mixtures of methyl bromide and ethylene dibromide, liquid, mixtures of methyl bromide and chlorpicrin, liquid, or methyl bromide and nonflammable, nonliquefied compressed gas mixtures, liquid.**

(a) Methyl bromide, liquid (bromomethane), mixtures of methyl bromide and ethylene dibromide, liquid, mixtures of methyl bromide and chlorpicrin, liquid, or methyl bromide and nonflammable, nonliquefied compressed gas mixtures, liquid, must be packed in specification containers as follows:

(1) Spec. 5A (§ 78.81 of this chapter). Metal drums not exceeding 30 gallons capacity or metal drums of bilge type not exceeding 33 gallons capacity and with openings not exceeding 2.3 inches in diameter. Use of these containers will be permitted because of the present emergency and until further order of the Commission.

(2) Spec. 15A, 15B, 15C, 16A, 19A, or 12B (§§ 78.168, 78.169, 78.170, 78.185, 78.190, or 78.205 of this chapter). Wooden, wire-bound wooden, or fiberboard boxes, with inside metal cans containing not over 1 pound each; outage required so can shall not become liquid-full at 130° F. Cans must be of tinplate or lined with suitable material and must have concave or pressure ends. Cans must be able to withstand an interior pressure of 130 pounds per square inch gauge without evidence of leakage or permanent distortion.

(3) Spec. 3A225, 3AA225, 3B225, 3E1800, 4A225, 4B225, or 4BA225 (§ 78.36, § 78.37, § 78.38, § 78.42, § 78.49, § 78.50, or § 78.51 of this chapter). Metal cylinders. Valves or other closing devices must be protected to prevent injury in transit by screw-on metal caps or by packing the cylinders in strong boxes or crates. Cylinders having a wall thickness of less than 0.08 inch must be packed in boxes or crates (see § 73.25).

(4) Spec. 4D300 or 4DA500 (§ 78.53 or § 78.58 of this chapter). Metal spheres, for use in aircraft only, must be equipped with approved safety devices and must be packed in strong boxes or crates (see § 73.25).

(5) Spec. 105A100,[1] 105A100–W, 106A500,[1] 106A500–X or 111A100–W–4 (§§ 79.100, 79.101, 79.200, 79.201, 79.300, 79.301 of this chapter). Tank cars.

NOTE 1: Tanks complying with ICC–106A (§ 78.275 or 78.276 of this chapter) specification may be transported in or on motor vehicles and in the manner authorized in § 77.840(c) of this chapter, provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting.

(b) Outage must be sufficient to prevent tank car from becoming entirely filled with liquid at the following temperature: Spec. 105A100,[1] 105A100–W, or 111A100–W–4 (§§ 79.100, 79.101, 79.200, 79.201 of this chapter) at 105 F; spec. 106A500,[1] or 106A500–X (§§ 79.300, 79.301 of this chapter) at 130 F.

(c) Outage must be sufficient to prevent cylinders or spheres from becoming entirely filled with liquid at 130° F. and

when the vacant space (outage) is charged with nitrogen, carbon dioxide, or air the pressure in the cylinder or sphere at 130° F. must not exceed 5/4 the marked service pressure of the cylinder or sphere.

(d) Spec. 17C (§ 78.115 of this chapter). Metal drums (single-trip) not over 5¼ gallons marked capacity each and having no opening exceeding 2.3 inches in diameter. Authorized only for mixtures containing not over 40 percent by weight of methyl bromide.

(e) Spec. MC 330 (§ 78.336 of this chapter). Tank motor vehicles having a design pressure not less than 250 pounds per square inch equipped with an approved spring-relief safety valve. Outage must be sufficient to prevent tank from becoming entirely filled with liquid at 130° F. Authorized for methyl bromide-ethylene dibromide mixture only.

**§ 73.354 Motor fuel antiknock compound or tetraethyl lead.**

(a) Motor fuel antiknock compound (a mixture of one or more organic lead compounds such as tetraethyl lead, triethylmethyl lead, diethyldimethyl lead, ethyltrimethyl lead, and tetramethyl lead, with one or more halogen compounds such as ethylene dibromide and ethylene dichloride, hydrocarbon solvents or other equally efficient stabilizers) or tetraethyl lead must be packed in specification containers as follows:

(1) Spec. 15A (§ 78.168 of this chapter). Wooden boxes with inside glass or earthenware containers of not over 1 pint capacity each, or metal cans, inclosed in hermetically sealed (soldered) metal cans, spec. 2A (§ 78.20 of this chapter).

(2) Spec. 5 or 5A (§§ 78.80 or 78.81 of this chapter). Metal barrels or drums, with openings not exceeding 2.3 inches in diameter.

(3) Cylinders as prescribed for any compressed gas, except acetylene.

(4) Spec. 105A300–W (§ 78.286 of this chapter). Tank car. Stenciled on both sides of the tank "FOR MOTOR FUEL ANTIKNOCK COMPOUND ONLY." Tank car not authorized for tetraethyl lead. Openings in tank heads to facilitate application of nickel lining are authorized and must be closed in an approved manner.

(5) Spec. MC 330 (§ 78.336 of this chapter) (see Note 1). Tank motor vehicles. Authorized for motor fuel antiknock compound only.

NOTE 1: Spec. MC 300, MC 301,[1] MC 302 or MC 303 (§ 78.321, 78.323, or 78.324 of this chapter) tank motor vehicles in motor fuel antiknock compound service prior to October 1, 1955 may be continued in service.

(6) Spec. 51 (§ 78.245 of this chapter). Portable tanks having a minimum design pressure of 100 pounds per square inch. Authorized for motor fuel antiknock compound only.

(7) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes constructed of at least 375-pound test (Mullen or Cady) solid fiberboard with inside metal cans enclosed in hermetically sealed (soldered) metal cans, not over 5 pounds capacity each. Each inside metal container must be enclosed in a taped, double-faced corrugated liner constructed of at least 200-pound test (Mullen or Cady) fiberboard and fitted with die-cut end caps constructed of at least 200-pound test (Mullen or Cady) double-walled corrugated fiberboard. Authorized gross weight not over 90 pounds.

(b) Outage must be sufficient to prevent any container from becoming entirely filled with liquid at 130° F.

**§ 73.355 Phenyldichlorarsine.**

(a) Phenyldichlorarsine must be packed in specification containers as follows:

(1) Spec. 5A (§ 78.81 of this chapter). Metal barrels or drums, made of not less than 12 gauge steel, and limited to 30 gallons capacity, with openings not exceeding 2.3 inches in diameter. Each metal barrel or drum must be tested, before each filling to 20 pounds hydrostatic test.

**§ 73.356 Thiophosgene.**

(a) Thiophosgene must be packed in specification containers as follows:

(1) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, with inside containers which must be tightly closed glass bottles not exceeding 1 pint capacity each, securely packed in absorbent incombustible cushioning material. Cushioning material must be capable of absorbing entire contents of the container.

(2) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes, with inside containers which must be tightly closed glass bottles not exceeding 1 quart capacity each, securely packed in absorbent incombustible cushioning material. Cushioning material must be capable of absorbing entire contents of container.

**§ 73.357 Chlorpicrin and chlorpicrin mixtures containing no compressed gas or poisonous liquid, class A.**

(a) *Chlorpicrin.* Chlorpicrin, when offered for transportation by carriers by rail freight, highway, or water, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, 15C, or 16A (§§ 78.168, 78.169, 78.170, or 78.185 of this chapter). Wooden boxes with inside glass bottles or tubes in hermetically sealed metal cans in corrugated fiberboard cartons, spec. 2C (§ 78.22 of this chapter). Bottles must contain not over 1 pound of liquid each, must be filled to not over 95 percent capacity, must be tightly and securely closed, and must be cushioned in cans with at least ½ inch of absorbent material. Cans must be made of metal at least 32 gauge United States standard. Total amount of liquid in outside box must not exceed 24 pounds.

(2) Spec. 12B (§ 78.205 of this chapter). One-piece corrugated fiberboard boxes at least 200-pound test with inside glass bottles or tubes in hermetically sealed metal cans in individual unsealed one-piece corrugated fiberboard boxes, spec. 12B at least 200-pound test. Bottles must contain not over 1 pound of liquid each, must be filled to not over 95 percent capacity, must be tightly and securely closed, and must be cushioned in cans with at least ½ inch of absorbent material. Cans must be made of metal at least 32 gauge United States standard. Total amount of liquid in outside box must not exceed 12 pounds.

(3) Spec. 12B (§ 78.205 of this chapter). One-piece corrugated fiberboard boxes at least 200-pound test with not more than one inside glass bottle or tube in a hermetically sealed metal can. Bottles must contain not over 1 pound of liquid, must be filled to not over 95 percent capacity, must be tightly and securely closed, and must be cushioned in cans with at least ½ inch of absorbent material. Cans must be made of metal at least 32 gauge United States standard.

(b) *Chlorpicrin and mixtures of chlorpicrin containing no compressed gas or poisonous liquid, class A.* Chlorpicrin and mixtures of chlorpicrin containing no compressed gas or poisonous liquid, class A, in addition to containers prescribed in paragraph (a) of this section, when offered for transportation by carriers by rail freight, highway, or water, may be shipped in specification containers as follows:

(1) Spec. 3A, 3AA, 3B, 3C, 3D, 3E, 4A, 4B, 4BA, or 4C (§ 78.36, 78.37, 78.38, 78.40, 78.41, 78 42, 78.49, 78.50, 78.51, or 78.52 of this chapter). Metal cylinders of not over 275 pounds water capacity (nominal). Valves or other closing devices must be protected, to prevent injury in transit, by screw-on metal caps or by packing the cylinders in strong boxes or crates. Cylinders closed by means of solid plugs may have the plugs protected by metal collars. Cylinders having a wall thickness of less than 0.08 inch must be packed in boxes or crates (see § 73.25).

NOTE 1: Because of the present emergency and until further order of the Commission, cylinders not exceeding 458 pounds water capacity are authorized for mixtures containing not over 15 percent by volume of chlorpicrin.

(2) Spec. 5A (§ 78.81 of this chapter). Metal drums of not exceeding 33 gallons capacity with welded seams.

NOTE 1: Because of the present emergency and until further order of the Commission, drums not exceeding 55 gallons capacity with welded seams are authorized for mixtures containing not over 15 percent by volume of chlorpicrin.

(3) Spec. 17C or 17E (§§ 78.115 and 78.116 of this chapter). Metal drums (single-trip) with openings not exceeding 2.3 inches in diameter. Capacity not to exceed 30 gallons. Authorized only for chlorpicrin mixtures containing not to exceed 15 percent chlorpicrin by weight or 15 percent by volume chlorpicrin, 85 percent by volume dichloropropene technical, and only authorized for such mixtures not classed as flammable under these regulations.

(4) Spec. 106A500[1] or 106A500–X (§§ 79.300, 79.301 of this chapter). Tank cars. Tanks shall not be equipped with safety devices of any type and valves shall be protected by metal caps. Outage

[1] Use of existing cargo tanks authorized, but new construction not authorized.

[1] Use of existing tank cars authorized, but new construction not authorized.

shall be sufficient to prevent tanks from becoming liquid full at 130 F.

Note 1: Tanks complying with ICC–106A (§§ 79.300 and 79.301 of this chapter) specification may be transported in or on motor vehicles and in the manner authorized in § 77.840(c) of this chapter, provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting.

(5) Spec. 105A300–W, 105A400–W, or 105A500–W (§ 78.286, 78.287, or 78.288 of this chapter). Tank cars.

(c) Chlorpicrin and mixtures of chlorpicrin containing no compressed gas or poisonous liquid, class A, when offered for transportation by rail express must be packed in specification containers as follows (also authorized for transportation by carriers by rail freight, highway, or water):

(1) Spec. 15A, 15B, 15C, or 16A (§§ 78.168, 78.169, 78.170, or 78.185 of this chapter). Wooden boxes with inside glass bottles or tubes in hermetically sealed metal cans in corrugated fiberboard cartons, spec. 2C (§ 78.22 of this chapter). Bottles must contain not over 1 pound of liquid each, must be filled to not over 95 percent capacity, must be tightly and securely closed, and must be cushioned in cans with at least ½ inch of absorbent material. Cans must be made of metal at least 32 gauge United States standard. Total amount of liquid in outside box must not exceed 24 pounds.

(2) Spec. 15A (§ 78.168 of this chapter). Wooden boxes, metal strapped, with chlorpicrin absorbed in an efficient absorbing material packed in hermetically sealed metal cans not exceeding 1 quart capacity each.

(3) Spec. 12B (§ 78.205 of this chapter). One-piece corrugated fiberboard boxes at least 200-pound test with inside glass bottles or tubes in hermetically sealed metal cans in individual unsealed one-piece corrugated fiberboard boxes, Spec. 12B at least 200-pound test. Bottles must contain not over 1 pound of liquid each, must be filled to not over 95 percent capacity, must be tightly and securely closed, and must be cushioned in cans with at least ½ inch of absorbent material. Cans must be made of metal at least 32 gauge United States standard. Total amount of liquid in outside box must not exceed 12 pounds.

(4) Spec. 12B (§ 78.205 of this chapter). One-piece corrugated fiberboard boxes at least 200-pound test with not more than one inside glass bottle or tube in a hermetically sealed metal can. Bottles must contain not over 1 pound of liquid, must be filled to not over 95 percent capacity, must be tightly and securely closed, and must be cushioned in cans with at least ½ inch of absorbent material. Cans must be made of metal at least 32 gauge United States standard.

**§ 73.358 Hexaethyl tetraphosphate, methyl parathion, organic phosphate compound, n.o.s., parathion, tetraethyl dithio pyrophosphate, and tetraethyl pyrophosphate, liquid.**

(a) Hexaethyl tetraphosphate, methyl parathion, organic phosphate compound, n.o.s., parathion, tetraethyl dithio pyrophosphate, and tetraethyl pyrophosphate, liquid must be packed in specification containers as follows:

(1) Spec. 5, 5A, or 5B (§§ 78.80, 78.81, or 78.82 of this chapter). Metal barrels or drums, with openings not exceeding 2.3 inches in diameter.

(2) Spec. 17C or 17E (§§ 78.115 or 78.116 of this chapter), metal drums (single-trip), with openings not exceeding 2.3 inches in diameter. Spec. 17E drums authorized for not over 5 gallons capacity each.

(3) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes, with metal inside containers of not over 5 gallons capacity each.

(4) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, with inside glass bottles not over 1 gallon capacity each, securely cushioned in liquid-tight metal cans.

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drums, with inside glass containers not over 1 gallon capacity each.

(6) Spec. 37A (§ 78.131 of this chapter). Metal drums (single-trip), with inside glass containers not over 1 gallon capacity each.

(7) Cylinders as prescribed for any compressed gas, except acetylene, are also authorized.

(8) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with not more than one inside glass container of not over 1 gallon capacity, securely cushioned. Completed package, with glass container filled with water, when closed for shipment, must be capable of withstanding six four-foot drops onto solid concrete in the order bottom, four sides, and top without breakage.

(9) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with not more than one inside container of polyethylene, or other nonfragile plastic material, and closed by a screw cap of similar material, not over 16 ounces, surrounded by absorbent cushioning and packed in a one gallon securely closed metal can which shall be surrounded with absorbent cushioning material within the outside fiberboard box.

(10) Spec. 42B (§ 78.107 of this chapter). Aluminum drums.

**§ 73.359 Hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphate compound mixtures, n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures, liquid.**

(a) Hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphate compound mixtures, n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures (solutions, emulsions, or emulsifiable liquids) containing not more than 50 percent hexaethyl tetraphosphate, methyl parathion, organic phosphate compound mixtures, n.o.s., parathion, tetraethyl dithio pyrophosphate, or tetraethyl pyrophosphate by weight, must be packed in specification containers as follows:

(1) Spec. 5, 5A, or 5B (§§ 78.80, 78.81, or 78.82 of this chapter). Metal barrels or drums, with openings not exceeding 2.3 inches in diameter.

(2) Spec. 17C (§ 78.115 of this chapter). Metal drums (single-trip), with openings not exceeding 2.3 inches in diameter.

(3) Spec. 17E or 37B (§ 78.116 or §78.132 of this chapter). Metal drums (single-trip) with openings not exceeding 2.3 inches in diameter. Capacity not to exceed 10 gallons for spec. 17E drums. Spec. 37B drums must be constructed of at least 24-gauge metal with welded side seams, of capacity not over 5½ gallons, and must be tested as prescribed by § 78.116–12 and 78.116–13 of this chapter. Authorized only for mixtures not classed as flammable under these regulations.

(4) Spec. 15A, 15B, 15C, or 15E (§§ 78.168, 78.169, 78.170, or 78.172 of this chapter). Wooden boxes, with metal inside containers not over 10 gallons capacity each.

(5) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, with inside glass bottles not over 1 gallon capacity each, securely cushioned in liquid-tight metal cans.

(6) Spec. 21C (§ 78.224 of this chapter). Fiber drums, with inside glass containers not over one gallon capacity each.

(7) Spec. 37A (§ 78.131 of this chapter). Metal drums (single-trip), with inside glass containers not over 1 gallon capacity each.

(8) Spec. 12B (§78.205 of this chapter). Fiberboard boxes as authorized by § 78.205–19 (a) of this chapter.

(9) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with not more than one inside glass container of not over 1 gallon capacity, securely cushioned. Completed package, with glass container filled with water, when closed for shipment, must be capable of withstanding six four-foot drops onto solid concrete in the order bottom, four sides, and top without breakage.

(10) Spec. 42B (§ 78.107 of this chapter). Aluminum drums.

(11) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside high-density polyethylene bottles not over 1-gallon capacity each. Polyethylene bottles must have a minimum wall thickness of 0.015 inch and be equipped with screw-cap closures additionally taped for securement. Each polyethylene bottle shall be packed in an inside fiberboard box. Not more than four inside fiberboard boxes with inside polyethylene bottles shall be packed in one outside shipping container. Polyethylene used in construction of inside polyethylene bottles must be of a type compatible with the lading and shall prevent permeation of contents to a degree that would cause a hazardous condition in transportation and handling.

(12) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside securely closed metal containers not over 1-gallon capacity each. Fiberboard boxes shall be constructed of not less than 500-pound test (Mullen or Cady) double-wall corrugated fiberboard. Not more than six 1-gallon metal containers shall be packed in one outside container. Authorized gross weight not over 65 pounds.

(13) Spec. 105A300–W (§§ 79.100 and 79.101 of this chapter). Tank cars. Au-

thorized for organic phosphate compound mixtures, n.o.s., only.

(b) Hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphate compound mixtures, n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures (solutions, emulsions, or emulsifiable liquids) containing more than 50 percent hexaethyl tetraphosphate, methyl parathion, organic phosphate compound mixtures, n.o.s., parathion, tetraethyl dithio pyrophosphate, or tetraethyl pyrophosphate by weight, must be packed in specification containers as follows:

(1) Spec. 5, 5A, or 5B (§§ 78.80, 78.81, or 78.82 of this chapter). Metal barrels or drums, with openings not exceeding 2.3 inches in diameter.

(2) Spec. 17C, 17E, or 37B (§ 78.115, § 78.116, or § 78.132 of this chapter). Metal drums (single-trip) with openings not exceeding 2.7 inches in diameter. Spec. 17E drums authorized for not over 5 gallons capacity each. Spec. 37B drums must be constructed of at least 24-gauge metal with welded side seam, of not over 5½ gallons capacity, and must be tested as prescribed by §§ 78.116–12 and 78.116–13 of this chapter.

(3) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes, with metal inside containers not over 5 gallons capacity each.

(4) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes, with inside glass bottles not over 1 gallon capacity each, securely cushioned in liquid-tight metal cans.

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drums, with inside glass containers not over one gallon capacity each.

(6) Spec. 37A (§ 78.131 of this chapter). Metal drums (single-trip), with inside glass containers not over 1 gallon capacity each.

(7) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with not more than one inside glass container of not over 1 gallon capacity securely cushioned. Completed package, with glass container filled with water, when closed for shipment, must be capable of withstanding six four-foot drops onto solid concrete in the order bottom, four sides, and top without breakage.

(8) Spec. 42B (§ 78.107 of this chapter). Aluminum drums.

(9) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with not more than six inside high-density polyethylene bottles having screw-cap closures, not over 1-quart capacity each. Fiberboard boxes must have full-height corrugated fiberboard liner, top and bottom pads, and bottles must be separated by corrugated fiberboard partitions. Plastic used in construction of bottles must be of a type compatible with the lading.

(c) Hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphate compound mixtures, n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures (solutions, emulsions, or emulsifiable liquids) containing not more than 25 percent hexaethyl tetraphosphate, methyl parathion, organic phosphate compound mixtures, n.o.s., parathion, tetraethyl dithio pyrophosphate, or tetraethyl pyrophosphate by weight, in inside metal containers not over 8-fluid ounces capacity each, packed in strong outside containers together with sufficient absorbent material to completely absorb the liquid in the event of leakage, are exempt from specification packaging, marking, and labeling requirements. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

### § 73.360 Perchloro-methyl-mercaptan.

(a) Perchloro-methyl-mercaptan in any quantity must not be packed with any other article. When offered for transportation by carriers by rail freight, highway, or water must be packed in specification containers as follows:

(1) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs, with inside containers which must be glass bottles not over 2 quarts capacity each, individually enclosed in tightly closed metal cans and cushioned therein with incombustible material. Net weight not over 100 pounds in one outside container.

(2) Spec. 15A, 15B, 15C, or 16A (§§ 78.168, 78.169, 78.170, or 78.185 of this chapter). Wooden boxes, with inside containers which must be glass bottles not over 2 quarts capacity each, individually enclosed in tightly closed metal cans and cushioned therein with incombustible material. Net weight not over 100 pounds in one outside container.

(3) Spec. 5H (§ 78.87 of this chapter). Lead-lined metal barrels or drums not over 33 gallons each.

(4) Spec. 5K or 5M (§ 78.88 or § 78.90 of this chapter). Nickel or monel barrels or drums.

### § 73.361 Aldrin mixtures, liquid, with more than 60 percent aldrin.

(a) Aldrin mixtures, liquid, with more than 60 percent aldrin must be shipped in specification containers as follows:

(1) As prescribed in § 73.346.

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or § 78.99 of this chapter). Metal barrels or drums. Authorized only for viscous mixtures or those which may become partially solid.

(3) Spec. 17C or 17H (§ 78.115 or § 78.118 of this chapter). Metal drums (single-trip). Drums with opening exceeding 2.3 inches in diameter authorized only for viscous mixtures or those which may become partially solid.

(b) Aldrin mixtures, liquid, containing 60 percent or less aldrin and no other material classed as dangerous under these regulations are not subject to Parts 71–78 of this chapter.

### § 73.362 4-Chloro-o-toluidine hydrochloride.

(a) 4-Chloro-o-toluidine hydrochloride must be shipped in specification containers as follows:

(1) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with glass polyethylene, or equally efficient inside containers not over 1 quart capacity each, securely packed in a tightly closed metal container.

(2) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes with glass, polyethylene, or equally efficient inside containers not over 1 quart capacity each. Glass containers must be securely packed in tightly closed metal containers.

(3) Spec. 17C or 17H (§§ 78.115 or 78.118 of this chapter). Metal drums (single-trip).

(4) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

### § 73.362a Dinitrophenol solutions.

(a) Dinitrophenol solutions must be packed in specification containers as follows:

(1) In containers prescribed in § 73.346.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard box with glass, earthenware, or metal inside containers not over 1 gallon capacity each; not to contain more than 4 inside glass or earthenware containers if their capacity is greater than 5 pints each.

### § 73.363 Packing for class B poisons, solid.

(a) Closing and cushioning. All containers must be tightly and securely closed. Inside containers must be cushioned as prescribed, or in any case when necessary to prevent breakage or leakage.

(b) Testing inside containers. All inside containers, except those made of glass, must be able to pass a test by dropping, after filling, from a height of 4 feet to solid concrete without rupture or sifting of contents, except that for bags with contents weighing 25 pounds, a drop test of 2 feet is required.

### § 73.364 Exemptions for poisonous solids, class B.

(a) Poisonous solids, class B, except beryllium metal powder; carbolic acid (phenol) other than as specified in § 73.369(b); cyanides, other than as specified in § 73.370 (b) and (d); cyanogen bromide, hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphate compound, n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures, other than as specified in § 73.377(f); in tightly closed inside containers, securely cushioned when necessary to prevent breakage and packed as follows, are exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(1) In inside glass, earthenware, or composition bottles or jars, or metal containers, or lock-corner sliding-lid wooden boxes, of not over 5 pounds capacity each; or chipboard, pasteboard, or fiber cartons, cans, boxes, or tightly closed strong plastic bags or bottles compatible with product of not over 1 pound capacity each, packed in outside wooden or fiberboard boxes, or wooden barrels or

kegs. Net weight of contents of outside container not over 100 pounds.

(2) In inside chipboard, pasteboard, or fiber cartons, cans, or boxes, of not over 5 pounds capacity each, packed in outside fiberboard or wooden boxes. Not more than 6 of these cartons shall be packed in any outside container.

**§ 73.365 Poisonous solids not specifically provided for.**

(a) Poisonous solids, as defined in § 73.343, other than those for which special requirements are prescribed, must be packed in specification containers of a design and constructed of materials that will not react dangerously with or be decomposed by the chemical packed therein, as follows:

(1) Spec. 5, 5A, 5B, 6A, 6B, or 6C (§§ 78.80, 78.81, 78.82, 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 17E, 17H, 37A, or 37B (§§ 78.116, 78.118, 78.131, or § 78.132 of this chapter). Metal drums (single-trip). Gross weight not over 375 pounds, except for material fused solid in the drum a gross weight of 880 pounds and not over 550 pounds gross weight for waste material containing arsenic trioxide is authorized in drums constructed of at least 18 gauge steel regardless of gross weight marking embossed in the container.

(3) [Reserved]

(4) Spec. 10A, 10B, or 10C (§§ 78.155, 78.156, or 78.157 of this chapter). Wooden barrels or kegs lined with creped-paper bag, spec. 2J (§ 78.28 of this chapter). Liner may be omitted if material is not pulverized or liable to sift.

NOTE 1: Because of the present emergency and until further order of the Commission, wooden whiskey barrels, with char removed and properly recoopered, which comply with all the provisions of spec. 10B, are also authorized. Marking is required on the head of each container, by the reconditioner, by hot branding iron, as follows:

ICC–10B.

Name or symbol (letters) of reconditioner; this must be registered with the Bureau of Explosives and located just above, below, or following the mark ICC–10B.

Size of markings (minimum): ¾-inch high.

(5) Spec. 11A (§ 78.160 of this chapter). Wooden barrels or kegs, tongued and grooved, net weight of contents not over 115 pounds each.

(6) Spec. 12B or 12C (§§ 78.205 or 78.206 of this chapter). Fiberboard boxes, with inside containers which must be metal cans not over 25 pounds capacity each; glass bottles not over 1 gallon capacity each; fiber cans or boxes, spec. 2G (§ 78.26 of this chapter); sliding-top wooden boxes, lined to prevent sifting, not over 25 pounds capacity each; or paper bags, spec. 2D (§ 78.23 of this chapter). Packages containing glass or earthenware containers must not weigh over 65 pounds gross nor contain more than 4 inside containers of over 5 pints capacity each. Outside containers must be not over 5,000 cubic inches capacity nor contain over 50 pounds net weight each, except as provided in § 78.205–23 of this chapter.

TEST: The completed package prepared as for shipping must be capable of standing a drop of 4 feet to solid concrete without breakage of the container or any sifting of contents.

(7) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with securely closed inside fiberboard or chipboard boxes not over 6 pounds net weight each. Interior containers must be at least .028 inch thick for those not over 2½ pounds net weight each and at least .034 inch thick for others. Outside packages must contain not over 36 pounds net weight of material each.

TEST: The individual interior containers as well as the completed package prepared as for shipping must be capable of standing a drop of 4 feet to solid concrete without breakage of the container or any sifting of contents.

(8) Spec. 15A (§ 78.168 of this chapter). Wooden boxes, with inside containers which must be securely closed paper bags, placed within a waterproof duplex bag, spec. 2J (§ 78.23 of this chapter). Net weight of material in one outside box, not over 100 pounds.

(9) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes, with inside containers which must be metal cans not over 25 pounds capacity each; glass or earthenware containers not over 1 gallon capacity each; except that inside containers of not over 5 gallons each and containing not over 25 pounds net weight are authorized when only one inside container is packed in each outside container. Fiber cans or boxes, spec. 2G (§ 78.26 of this chapter), or sliding-top wooden boxes, lined to prevent sifting, not over 25 pounds capacity each. Net weight of material in outside container, not over 100 pounds each.

(10) Spec. 18B (§78.193 of this chapter). Wooden kits lined as prescribed by spec. 2K (§ 78.29 of this chapter). Net weight not over 30 pounds each.

(11) [Reserved]

(12) Spec. 22A (§ 78.196 of this chapter). Plywood drums. Net weight not over 115 pounds each.

(13) Spec. 103,[1] 103–W, 103A,[1] 103A–W, 111A60–F–1, 111A60–W–1, 111A100–F–2, or 111A100–W–2 (§§ 79.200, 79.201 of this chapter). Tank cars.

(14) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized net weight not over 225 pounds.

(15) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes constructed of at least 275-pound test double-faced fiberboard and provided with a perimeter liner and bottom pad of at least 200-pound test fiberboard. Boxes constructed of at least 350-pound fiberboard having top and bottom pads shall not require perimeter liner. Product must be contained within a tightly closed polyethylene or other equally efficient plastic bag constructed of material having minimum thickness of 0.004 inch. Not more than 25 pounds net weight of product may be packed in one outside box.

(16) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass bottles not over 5 pounds capacity each. Not more than 4 inside glass bottles of 5 pounds capacity each shall be packed in one outside container. Shipper must have established that the completed package meets test requirements prescribed by § 78.210–10 of this chapter.

**§ 73.366 Arsenic (arsenic trioxide) or arsenic acid (solid).**

(a) Arsenic (arsenic trioxide) or arsenic acid (solid) must be packed in specification containers as follows:

(1) As prescribed in § 73.365.

(2) Spec. 10A, 10B, or 10C (§§ 78.155, 78.156, or 78.157 of this chapter). Wooden barrels or kegs with tongued-and-grooved staves; a 4½-inch metal bung in the head is permitted; lining not required.

(3) In addition to specification containers prescribed in this section, arsenic (arsenic trioxide) or arsenic acid (solid) may be shipped when packed in portable, collapsible, rubber containers, not over 70 cubic feet capacity, of a type approved by the Bureau of Explosives. Authorized for carload or truckload shipments only.

(b) Import shipments of arsenic (arsenic trioxide) may also be shipped when packed as follows:

(1) Inclosed in strong waterproofed cloth containers, securely sewn and closed so as to provide a sift-proof package, and then packed in strong, tight, metal-strapped wooden boxes constructed of material not less than three-fourths inch thick throughout.

(2) In strong and tight metal drums inclosed in a strong outside wooden barrel.

**§ 73.367 Arsenical compounds n.o.s., arsenate of lead, calcium arsenate, Paris green, and arsenical mixtures.**

(a) Arsenical compounds n.o.s., arsenate of lead, calcium arsenate, Paris green, and arsenical mixtures must be packed in specification containers as follows:

(1) As prescribed in § 73.365.

NOTE 1: Because of the present emergency and until further order of the Commission, wooden hoops as specified in § 78.160–6 of this chapter may be used in lieu of steel hoops required by specification 10B (§ 78.156 of this chapter).

(2) Spec. 36A or 36B (§§ 78.230 or 78.233 of this chapter). Triplex bags. Authorized only for arsenical insecticides and fungicides containing 10.0 percent or less of arsenic trioxide.

(3) Spec. 44B (§ 78.236 of this chapter). Multiwall paper bags with inside paper bags, spec. 2D (§ 78.23 of this chapter). Net weight not over 50 pounds each.

(4) Spec. 44C, (§ 78.237 of this chapter). Multiwall paper bags. For carload and truckload shipments only. Net weight not over 50 pounds each.

(5) Spec. 44D (§ 78.238 of this chapter). Multiwall paper bags. For less-than-carload and less-than-truckload shipments. Where extensible kraft is used the minimum total basis weight shall be 260 pounds. Net weight not over 50 pounds each.

(6) Spec. 44E (§ 78.239 of this chapter). Multiwall paper bags constructed with minimum total basis weight of 160 pounds. For carload or truckload ship-

[1] Use of existing tank cars authorized, but new construction not authorized.

ments only; loaded by the consignor and unloaded by the consignee or his duly authorized agent. Net weight not over 50 pounds each. Where extensible kraft is used the minimum total basis weight for 40 pound net weight bags shall be 190 pounds and for 20 pound net weight bags it shall be 150 pounds. Multiwall bags so constructed are authorized for less-than-carload and less-than-truckload shipments as well as carload and truckload shipments.

(b) Arsenical compounds n. o. s. containing not more than 6 percent arsenic of which not more than 0.5 percent is water soluble must be packed in specification containers as follows:

(1) As prescribed in paragraph (a) (1), (2), or (3) of this section.

(2) Spec. 44B (§ 78.236 of this chapter). Paper bags with two added inside thicknesses of No. 1 Kraft paper, one sheet having a Mullen test of 50 and the other sheet having a Mullen test of 40. Net weight not over 50 pounds each.

**§ 73.368 Arsenical dust, arsenical flue dust, and other poisonous noncombustible by-product dusts; also arsenic trioxide, calcium arsenate, and sodium arsenate.**

(a) Arsenical dust, arsenical flue dust, and other poisonous noncombustible by-product dusts from metal recovery operations not subject to dangerous spontaneous heating, and arsenic trioxide, calcium arsenate, or sodium arsenate, when delivery is made to plants with private sidings, only, may, in addition to containers prescribed in § 73.367, be shipped in sift-proof, self-clearing, hopper or bottom outlet steel cars or in sift-proof all steel flat bottom gondola cars with fixed sides and ends equipped with water-proof and dust-proof wooden or steel covers well secured in place for all openings, or in sift-proof box cars of all steel construction only when said cars are assigned exclusively to this service. See § 74.566(b) of this chapter for cleaning cars. Such cars, when used exclusively in this service, are not subject to the requirements of § 74.566(b) of this chapter.

(b) Arsenical dust and arsenic trioxide may be shipped in bulk in motor vehicles with steel, sift-proof, self-clearing hopper-type or dump-type bodies, with waterproof and dust-proof covers, well secured in place.

**§ 73.369 Carbolic acid (phenol), not liquid.**

(a) Carbolic acid (phenol), not liquid, must be packed in specification containers as follows:

(1) Spec. 5, 5A, 5B, 5C, 6A, 6B, or 6C (§§ 78.80, 78.81, 78.82, 78.83, 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs with securely closed inside drums of metal not thinner than No. 26 gauge, the space between drum and barrel or keg being filled with sawdust or rice hulls.

(3) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels or kegs with glass or earthenware inside containers, not over 1 gallon capacity each, or with metal inside containers not over 2 gallons capacity each.

(4) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with inside containers which must be metal cans not over 25 pounds capacity each.

(5) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes with glass or earthenware inside containers not over 1 quart capacity each, or with metal inside containers not over 1 gallon capacity each. Packages containing glass or earthenware containers must not weigh over 65 pounds gross; packages containing metal cans not over 84 pounds gross as provided in § 78.205–23 of this chapter, 65 pounds for others.

(6) Spec. 12D (§ 78.207 of this chapter). Fiberboard boxes with inside containers which must be: Glass or earthenware not over 1 gallon or 5 pounds capacity each; authorized for not more than 75 pounds gross weight; not to contain more than 4 such inside containers if their capacity is greater than 5 pints each.

(7) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with glass or earthenware inside containers not over 1 gallon or 5 pounds capacity each, except that inside containers up to 3 gallons or 15 pounds capacity each are authorized when only 1 is packed in each outside container; or with metal inside containers not over 10 gallons capacity each.

(8) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Wooden boxes with metal inside containers. Spec. 2F (§ 78.25 of this chapter) not over 250 pounds total capacity each.

(9) Spec. 17E or 17H (§ 78.116 or § 78.118 of this chapter). Metal drums (single-trip).

(10) [Reserved]

(11) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter). Metal drums (single-trip).

(12) Spec. 42B or 42C (§§ 78.107 or 78.108 of this chapter). Aluminum drums.

(13) Spec. 103,[1] 103–W, 103AL–W, 103A,[1] 103A–W, 103A–AL–W, 111A60AL–W, 111A60–F–1, 111A60–W–1, 111A100–F–2, 111A100–W–2 or 111A100–W–3 (§§ 79.200, 79.201 of this chapter). Tank cars.

(14) Spec. MC 300, MC 301,[2] MC 302, MC 303, MC 305, MC 310 or MC 311 (§ 78.321, 78.323, 78.324, 78.326, 78.330 or 78.331 of this chapter). Tank motor vehicles.

(15) Spec. 12A (§ 78.210 of this chapter). Fiberboard boxes with inside glass, polyethylene, or other nonfragile plastic bottles not over 5 pounds capacity each. Not more than 4 inside glass bottles of 5 pounds capacity each shall be packed in one outside container. Shipper must have established that the completed package meets test requirements prescribed by § 78.210–10 of this chapter.

(b) Carbolic acid (phenol), not liquid, in tightly closed inside containers, securely cushioned when necessary to prevent breakage and packed as follows, is exempt from specification packaging, marking, and labeling requirements, except that marking name of contents on outside container is required for shipments via carrier by water. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(1) In inside glass, earthenware, polyethylene or other nonfragile plastic bottles or jars not over 1 pound capacity each, or metal containers not over 5 pounds capacity each, packed in outside wooden boxes, barrels or kegs, or fiberboard boxes. Net weight of contents in fiberboard boxes shall not exceed 65 pounds; and not more than 100 pounds in wooden boxes, barrels or kegs.

**§ 73.370 Cyanides, or cyanide mixtures, except cyanide of calcium and mixtures thereof.**

(a) Cyanides, or cyanide mixtures (see paragraph (b) of this section for exemptions), except cyanide of calcium and mixtures thereof (see paragraph (c) of this section for packing requirements and paragraph (d) of this section for exemptions) if containing the cyanogen equivalent of 10 percent or more of potassium cyanide, must be packed in specification containers as follows:

(1) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Wooden boxes with metal inside containers, spec. 2F (§ 78.25 of this chapter), not over 25 pounds capacity each; or hermetically sealed (soldered) metal lining, spec. 2F, or in glass bottles not over 5 pounds capacity each.

(2) Spec. 11A or 11B (§§ 78.160 or 78.161 of this chapter). Wooden barrels with metal inside containers, spec. 2F (§ 78.25 of this chapter) not over 25 pounds capacity each; or hermetically sealed (soldered), metal lining, spec. 2F.

(3) Spec. 12B or 12C (§§ 78.205 or 78.206 of this chapter). Fiberboard boxes with metal inside containers, spec. 2F (§ 78.25 of this chapter) not over 25 pounds capacity each.

(4) Spec. 5, 5A, 5B, 6A, 6B, or 6C (§§ 78.80, 78.81, 78.82, 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(5) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter), metal drums (single-trip containers).

(6) Bulk in watertight metal cars or in watertight container car metal containers.

(7) [Reserved]

(8) Spec. 45B (§ 78.240 of this chapter). Bags, cloth, and paper, lined. Authorized only for sodium cyanides of globular or pellet form, diameter not less than ¾ inch. Net weight not over 100 pounds.

(9) Bulk in watertight metal-bodied covered motor vehicles.

(10) [Reserved]

(11) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized net weight not over 225 pounds.

(12) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes constructed of at least 275-pound test double-faced fiberboard and provided with a perimeter liner and bottom pad of at least 200-

[1] Use of existing tank cars authorized, but new construction not authorized.

[2] Use of existing cargo tanks authorized, but new construction not authorized.

pound test fiberboard. Boxes constructed of at least 350-pound fiberboard having top and bottom pads shall not require perimeter liner. Product must be contained within a tightly closed polyethylene or other equally efficient plastic bag constructed of material having minimum thickness of 0.004 inch. Not more than 25 pounds net weight of product may be packed in one outside box.

(13) Bulk in strong, water-tight, metal portable containers of not over 70 cubic feet capacity each, approved by the Bureau of Explosives.

(b) *Cyanides, except cyanide of calcium and mixtures thereof; exemptions.* Cyanides, except cyanide of calcium and mixtures thereof (see paragraph (d) of this section), when packed and described as follows are exempt from specification packaging and labeling requirements. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(1) Cyanides, or cyanide mixtures, in tightly closed glass, earthenware, or metal inside containers, not over 1 pound each, securely cushioned and packed in outside wooden or fiberboard boxes, or in wooden barrels. Net weight of cyanides or cyanide mixture in any outside container, not over 25 pounds.

(2) Cyanide mixtures in tightly closed glass, earthenware, or metal inside containers, securely cushioned and packed in outside wooden or fiberboard boxes, or in wooden barrels. Net weight of cyanide mixtures in any outside container, not over 5 pounds.

(3) Cyanides of copper, zinc, lead and silver.

(c) *Cyanide of calcium and mixtures thereof.* Cyanide of calcium and mixtures thereof must be packed in specification containers as follows:

(1) As prescribed in paragraph (a) (2), (3), (4), (6), (9), (10) or (11) of this section.

(2) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Wooden boxes with metal inside containers, spec. 2F, not over 25 pounds capacity each; or hermetically sealed (soldered) metal lining, spec. 2F (§ 78.25 of this chapter).

(3) Spec. 37A or 37B (§ 78.131 or § 78.132 of this chapter), metal drums (single-trip containers); welded side seams required for Spec. 37B drums and all seams and closures must be watertight and hermetically sealed.

(d) *Cyanide of calcium and mixtures thereof; exemptions.* Cyanide of calcium and mixtures thereof when packed and described as follows are exempt from specification packaging and labeling requirements. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(1) Cyanide of calcium and mixtures thereof in tightly closed metal inside containers having not over 1 pound net weight each, or metal cans having not over 5 pounds net weight each. Not more than 25–1 pound containers or more than 1–5-pound container securely cushioned may be packed in the outside container which must be wooden or fiberboard boxes, or wooden barrels.

**§ 73.371 Dinitrobenzol.**

(a) Dinitrobenzol must be packed in specification containers as follows:

(1) As prescribed in § 73.346 or § 73.365.

(2) Spec. 11A (§ 78.160 of this chapter). Wooden barrels, gross weight 300 pounds; must be shipped in carload or truckload shipments only and must not be offered for transportation by carriers by rail express or water.

**§ 73.372 Mercury bichloride (mercuric chloride).**

(a) Mercury bichloride (mercuric chloride) must be packed in specification containers as follows:

(1) As prescribed in § 73.365.

(2) Spec. 15A (§ 78.168 of this chapter). Wooden boxes with inside containers consisting of strong paper bags in tightly closed inside wooden boxes.

**§ 73.373 Ortho-nitroaniline and paranitraniline.**

(a) Ortho-nitroaniline and paranitraniline must be packed in specification containers as follows:

(1) As prescribed in § 73.365.

(2) Spec. 11A (§ 78.160 of this chapter). Wooden barrels, gross weight 385 pounds; must be shipped in carload or truckload shipments only, and must not be offered for transportation by carriers by rail express or water.

(3) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized net weight not over 400 pounds.

(4) In addition to specification containers prescribed in this section, paranitraniline may be shipped in bulk in strong, water-tight, metal-bodied covered hopper motor vehicles.

**§ 73.374 Nitrochlorbenzene, meta or para.**

(a) Nitrochlorbenzene, meta or para, must be packed in specification containers as follows:

(1) As prescribed in § 73.365.

(2) Spec. 21C (§ 78.224 of this chapter). Fiber drums, authorized only for nitrochlorbenzene, para, flaked. Authorized net weight not over 400 pounds.

(3) Spec. 17E (§ 78.116 of this chapter). Metal drums (single-trip).

**§ 73.375 Sodium azide.**

(a) Sodium azide must be packed in specification containers as follows:

(1) Spec. 15A (§ 78.168 of this chapter). Wooden boxes, with inside containers which must be securely closed paper bags, placed within a waterproof duplex bag, spec. 2J (§ 78.28 of this chapter). Net weight of material in one outside box, not over 100 pounds.

NOTE 1: Because of the present emergency and until further order of the Commission, uncreped bags may be used.

**§ 73.376 Aldrin mixtures, dry, with more than 65 percent aldrin.**

(a) Aldrin mixtures, dry, with more than 65 percent aldrin, must be packed in specification containers as follows:

(1) As prescribed in § 73.365.

(b) Dry mixtures containing 65 percent or less aldrin, or aldrin, cast solid, and containing no other material classed as dangerous under these regulations are not subject to Parts 71–78 of this chapter.

**§ 73.377 Hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphate compound mixtures, n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures, dry.**

(a) Hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphate compound mixtures, n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures in which the liquid is absorbed in concentrations greater than 2 percent but not exceeding 27 percent in an inert dry material so as to form a dry mixture, must be packed in specification containers as follows:

(1) Spec. 12B or 12C (§ 78.205 or 78.206 of this chapter), fiberboard boxes, with inside containers which must be metal or fiber cans not over 12 pounds capacity each, or paper bags, spec. 2D, not over 12 pounds capacity each. Fiberboard boxes manufactured and marked for a gross weight of 65 pounds may have a gross weight of 70 pounds provided net weight of contents does not exceed 62 pounds. Inside containers and the completed package must be capable of withstanding the tests prescribed in paragraphs (c), (d), and (e) of this section.

(2) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter), wooden boxes, with inside containers which must be metal or fiber cans not over 12 pounds capacity each, or paper bags, spec. 2D (§ 78.23 of this chapter), not over 12 pounds capacity each. Inside containers must be capable of withstanding the tests prescribed in paragraphs (c) and (d) of this section.

(3) Spec. 5, 5B, 6A or 6C (§§ 78.80, 78.82, 78.97, or 78.99 of this chapter), metal barrels or drums.

(4) Spec. 17C, 17H or 37A (§§ 78.115, 78.118, or 78.131 of this chapter), metal drums (single-trip). Spec. 37A metal drums authorized for not over 100 pounds net weight.

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized net weight not over 225 pounds.

(b) Hexaethyl tetraphosphate mixtures, methyl parathion mixtures, organic phosphate compound mixtures, n.o.s., parathion mixtures, tetraethyl dithio pyrophosphate mixtures, and tetraethyl pyrophosphate mixtures in which the liquid is absorbed in concentrations greater than 27 percent in an inert dry material so as to form a dry mixture, must be packed in specification containers as follows:

(1) Spec. 12B or 12C (§§ 78.205 or 78.206 of this chapter), fiberboard boxes, with inside containers which must be metal cans not over 12 pounds capacity each. Inside containers and the completed package must be capable of withstanding the tests prescribed in paragraphs (c), and (e) of this section.

(2) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter), wooden boxes, with inside containers which must be metal cans not over 12 pounds capacity each. Inside containers must be ca-

pable of withstanding the tests prescribed in paragraph (c) of this section.

(3) Spec. 5, 5B, 6A, or 6C (§§ 78.80, 78.82, 78.97, or 78.99 of this chapter), metal barrels or drums.

(4) Spec. 17C, 17H, or 37A (§§ 78.115, 78.118, or 78.131 of this chapter), metal drums (single-trip). Spec. 37A metal drums authorized for not over 100 pounds net weight.

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized only for mixtures in which the liquid is absorbed in concentration not greater than 50 percent. Authorized net weight not over 225 pounds.

(c) Inside metal or fiber cans when closed as for shipment must be capable of withstanding two four-foot drops onto solid concrete without breakage of the container or any sifting of the contents. One drop must be on side of can and the other diagonally on the top rim or chime.

(d) Inside paper bags when closed as for shipment must be capable of withstanding two four-foot drops onto solid concrete without breakage of the container or any sifting of the contents. One drop must be made on bottom of bag and the other on either large face.

(e) Completed packages when closed as for shipment must be capable of withstanding two four-foot drops onto solid concrete without breakage of the container or any sifting of the contents. One drop must be made on bottom of package and the other drop on the smallest adjacent side area.

(f) Dry mixtures containing not more than 2 percent by weight of hexaethyl tetraphosphate, methyl parathion, organic phosphate compound mixtures, n.o.s., parathion, tetraethyl dithio pyrophosphate, or tetraethyl pyrophosphate and in which the liquid is absorbed in an inert material, are exempt from specification packaging, marking, and labeling requirements. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(g) Dry mixtures containing more than 2 percent but not exceeding 15 percent by weight of hexaethyl tetraphosphate, methyl parathion, organic phosphate compound mixtures, n.o.s., parathion, tetraethyl dithio pyrophosphate, or tetraethyl pyrophosphate, and in which the liquid is absorbed in an inert material, in addition to containers prescribed in paragraphs (a) and (b) of this section, may be packed in specification containers as follows:

(1) Spec. 44B (§ 78.236 of this chapter). Multi-wall paper bags with inside paper bags, spec. 2D (§ 78.23 of this chapter), not over 5 pounds capacity each. Net weight of material in outside container not over 30 pounds each.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes constructed of at least 275-pound test double-faced fiberboard and provided with a perimeter liner and top and bottom pad of at least 275-pound test fiberboard. Product must be contained within a tightly closed polyethylene or other equally efficient plastic bag constructed of material having minimum thickness of 0.003 inch. Not more than 50 pounds net weight of product may be packed in one outside box.

(h) Dry mixtures containing more than 2 percent but not exceeding 5 percent by weight of hexaethyl tetraphosphate, methyl parathion, organic phosphate compound mixtures, n.o.s., parathion, tetraethyl dithio pyrophosphate, or tetraethyl pyrophosphate, and in which the liquid is absorbed in an inert material, in addition to containers prescribed in paragraphs (a), (b), and (g) of this section, may be packed in specification containers as follows:

(1) Spec. 44D (§ 78.238 of this chapter). Multiwall paper bags not over 50 pounds net weight each. Where extensible kraft is used the minimum total basis weight shall be 260 pounds.

### § 73.378 Beryllium metal powder.

(a) Beryllium metal powder must be packed in specification containers as follows:

(1) Spec. 5, 5A, 5B, 6A, 6B or 6C (§§ 78.80, 78.81, 78.82, 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(2) Spec. 17H, 37A, or 37B (§ 78.118, § 78.131, or § 78.132 of this chapter). Metal drums (single-trip).

(3) Spec. 15A, 15B, 15C, 16A, or 19A (§§ 78.168, 78.169, 78.170, 78.185, or 78.190 of this chapter). Wooden boxes with inside metal cans not over 25 pounds capacity each.

(4) Spec. 12B or 12C (§ 78.205 or § 78.206 of this chapter). Fiberboard boxes with inside metal cans not over 25 pounds capacity each.

(5) Spec. 21C (§ 78.224 of this chapter). Fiber drums, with inside glass or metal containers of not over 25 pounds capacity each. Authorized net weight not over 225 pounds.

(6) Spec. 37P (§ 78.133 of this chapter). Steel drums, not over 5-gallons capacity, with polyethylene liner (nonreusable container). Drums exceeding 1-gallon capacity must be constructed of at least 24-gauge metal.

### § 73.379 Cyanogen bromide.

(a) Cyanogen bromide must be packed in tightly closed glass, earthenware, or metal inside containers not over 1-pound capacity each, securely cushioned and packed in outside wooden boxes. Net weight not over 25 pounds in one outside container.

### § 73.381 Tear gas or irritating substances, class C, Tear Gas Label; definition.

(a) For the purpose of Parts 71–78 of this chapter tear gases are liquid or solid substances which upon contact with fire or when exposed to air give off dangerous or intensely irritating fumes, such as brombenzylcyanide, chloracetophenone, diphenylaminechlorarsine, and diphenylchlorarsine, but not including any poisonous article, class A.

(b) All containers must be tightly and securely closed. Inside containers must be cushioned as prescribed, or in any case when necessary to prevent breakage or leakage.

(c) It shall not be permissible to transport class C poisons if there be any interconnecting means of any character between the containers.

### § 73.382 Tear gas or irritating substances, class C, not specifically provided for.

(a) Tear gas or irritating substances, class C, as defined in § 73.381(a) for which special packing is not prescribed, must be packed in specification containers as follows:

(1) Spec. 5, 5A, 5B or 5C (§ 78.80, 78,81, 78.82 or 78.83 of this chapter) metal barrels or drums; or spec. 17C (single-trip) (§ 78.115 of this chapter) metal drums not over 5 gallons capacity each.

(2) Spec. 6A, 6B, or 6C (§§ 78.97, 78.98, or 78.99 of this chapter). Metal barrels or drums.

(3) Spec. 15A or 15B (§§ 78.168 or 78.169 of this chapter). Wooden boxes with inside metal containers of not over 1 liquid gallon (10 pounds) capacity each. Not over 8 liquid gallons (80 pounds) of material may be packed in any outside container.

(4) Cylinders as prescribed for any compressed gas, except acetylene, are also authorized for use. These cylinders must be qualified, maintained, and filled in accordance with §§ 73.34 and 73.301 (g), if used for material with pressure exceeding 25 pounds per square inch at 70° F., they must also be retested as required by § 73.34.

(b) No class C poisons in cargo tanks. No "tear gases or irritating substances, class C" may be loaded into or transported in any cargo tank.

### § 73.383 Chemical ammunition.

(a) Chemical ammunition consisting of projectiles, shells, bombs, and other containers, except grenades, filled with gases, liquids, or chemicals class C without ignition elements, bursting charges, detonating fuzes, or other explosive components, must be packed for shipment in strong outside wooden or metal boxes. Boxes must be marked with name of contents and labeled as prescribed by this part for the gases, liquids, or chemicals contained therein.

(b) Chemical ammunition, when shipped as such, must not be equipped or packed with explosive or ignition elements (see §§ 73.53 (r) and 73.59 for explosive chemical ammunition).

### § 73.384 Monochloracetone, stabilized.

(a) Monochloracetone, stabilized, must be packed in specification containers as follows:

(1) Spec. 5, 5A or 17C (single-trip) (§ 78.80, 78.81 or 78.115 of this chapter). Metal barrels or drums.

(2) Spec. 15A, 15B, 15C, or 16A (§§ 78.168, 78.169, 78.170, or 78.185 of this chapter). Wooden boxes with inside glass bottles or tubes in hermetically sealed metal cans in corrugated fiberboard cartons, spec. 2C (§ 78.22 of this chapter). Bottles must contain not over 1 pound of liquid each, must be filled to not over 95 percent capacity, must be tightly and securely closed, and must be

cushioned in cans with at least ½ inch of absorbent material. Cans must be made of metal at least 32 gauge United States standard. Total amount of liquid in outside box must not exceed 24 pounds.

**§ 73.385 Tear gas grenades, tear gas candles, or similar devices.**

(a) Tear gas grenades, tear gas candles, or similar devices containing lachrymatory (tear producing) substances, for civil or military use must be packed in specification containers as follows (see § 73.101 (d) and (e) for packing tear gas cartridges):

(1) Spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter). Metal-strapped wooden boxes. Functioning elements not assembled in grenades or devices must be in a separate compartment of these boxes, or in inside or separate outside boxes, spec. 15A, 15B, or 15C, and must be so packed and cushioned that they may not come in contact with each other or with the walls of boxes during transportation. Not more than 24 grenades and 24 functioning devices shall be packed in one outside container and the gross weight of the package must not exceed 75 pounds.

(2) Spec. 37A (§ 78.131 of this chapter). Metal drum (single-trip). Functioning elements must be packed in separate compartment. Not more than 24 grenades and 24 functioning devices shall be packed in one outside container and the gross weight of the container must not exceed 75 pounds.

(b) These articles must not be assembled with or packed in the same compartment with mechanically or manually operated firing, igniting, bursting, or other functioning elements, unless of a type or design approved by the Bureau of Explosives.

(c) Pending approval by the Commission of regulations classifying the numerous devices within the general descriptions of this section, and providing appropriate restrictions to be observed in the transportation thereof, no shipment of packages containing articles under this section shall be made until samples thereof have been examined by the Bureau of Explosives or by other competent testing laboratory in the presence of representative of the Bureau of Explosives, and the shipment is shown to possess such resistance to shocks of transportation and protection against leakage of contents as are afforded by standard types of packages described in Part 78 of this chapter, and the packages are labeled or marked to show compliance with this part.

NOTE 1: Grenades or other similar devices may be shipped completely assembled when shipments are made by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government, provided the functioning element is so packed that it cannot accidentally function. The outside containers must be metal-strapped wooden boxes, spec. 15A, 15B, or 15C (§§ 78.168, 78.169, or 78.170 of this chapter).

**§ 73.391 Radioactive materials class D Poison; definition.**

(a) For the purpose of Parts 71–78 of this chapter, radioactive material is any material or combination of materials that spontaneously emits ionizing radiation. For the purpose of Parts 71–78 of this chapter, radioactive materials are divided into three groups according to the type of rays emitted at any time during transportation, as follows:

(1) *Group I.* Radioactive materials that emit gamma rays only or both gamma and electrically charged corpuscular rays.

(2) *Group II.* Radioactive materials that emit neutrons and either or both the types of radiation characteristic of Group I materials.

(3) *Group III.* Radioactive Materials that emit electrically charged corpuscular rays only, i. e., alpha or beta, etc., or any other that is so shielded that the gamma radiation at the surface of the package does not exceed 10 milliroentgens for 24 hours at any time during transportation.

(b) Not more than 2,000 millicuries of radium, polonium, or other members of the radium family of elements, and not more than 2,700 millicuries (disintegration rate of 100,000 million ($10^{11}$) atoms per second) of any other radioactive substance may be packed in one outside container for shipment by rail freight, rail express, or highway, except by special arrangements and under conditions approved by the Bureau of Explosives or except as specifically provided in subparagraph (c) of this section.

NOTE 1. For purposes of Parts 71–78 of this chapter 1 millicurie is that amount of any radioactive material which disintegrates at the rate of 37 million atoms per second. One thousand millicuries is equal to one curie.

(c) Not more than 300 curies of solid cesium 137, cobalt 60, gold 198, or iridium 192 may be packed in one outside container for shipment by rail freight, rail express, or highway, except by special arrangements and under conditions approved by the Bureau of Explosives.

**§ 73.392 Exemptions for radioactive materials.**

(a) Radioactive materials are exempt from prescribed packaging, marking, and labeling requirements provided they fulfill all of the conditions in subparagraphs (1), (2), and (3) of this paragraph. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817 and Part 197 of this chapter.

(1) The package must be such that there can be no leakage of radioactive material under conditions normally incident to transportation.

(2) The package must contain not more than 0.1 millicuries of radium, or polonium, or that amount of strontium 89, strontium 90, or barium 140 which disintegrates at a rate of more than 5 million atoms per second; or that amount of any other radioactive substance which disintegrates at a rate of more than 50 million atoms per second.

(3) The package must be such that no significant alpha, beta, or neutron radiation is emitted from the exterior of the package and the gamma radiation at any surface of the package must be less than 10 milliroentgens for 24 hours.

(b) Manufactured articles other than liquids, such as instrument or clock dials or electronic tubes and appartus, of which radioactive materials are a component part, luminous compounds, and thoria nickel in mill shapes, including tubes, plates, sheets and bars, when securely packed in strong outside containers are exempt from specification packaging, marking, and labeling requirements provided the gamma radiation at any surface of the package is less than 10 milliroentgens in 24 hours. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(1) Switchboard or similar apparatus containing electronic tubes, of which radioactive materials are a component part, are exempt from specification packaging, marking, and labeling requirements when shipped in carload or truckload lots or when transported by private motor carrier provided the gamma radiation at any readily accessible surface of the units when prepared for shipment does not exceed 50 milliroentgens in 24 hours. Shipments for transportation by highway carriers are exempt also from Part 77 of this chapter, except § 77.817, and Part 197 of this chapter.

(c) Radioactive materials such as ores, residues, salts of natural uranium and thorium, etc., of low activity packed in strong tight containers are exempt from specification packaging and labeling requirements for shipments in carload lots by rail freight only, provided the gamma radiation or equivalent will not exceed 10 milliroentgens per hour at a distance of 12 feet from any surface of the car and that the gamma radiation or equivalent will not exceed 10 milliroentgens per hour at a distance of 5 feet from either end surface of the car. There must be no loose radioactive material in the car and the shipment must be braced so as to prevent leakage or shift of lading under conditions normally incident to transportation. The car must be placarded by the shipper as provided in §§ 74.541(b) and 74.553 of this chapter. Except when handling is supervised by the Atomic Energy Commission, shipments must be loaded by consignor or his duly authorized agent and unloaded by consignee or his duly authorized agent.

(d) Detonating fuzes with radioactive components as described in § 73.53 (g) (2) are exempt from labeling requirements.

(e) Magnesium-thorium alloys containing not more than 4 percent nominal thorium 232, in formed shapes, must be in bundles, boxes, barrels or crates and as such are exempt from specification packaging but must be labeled as described in § 73.414(d). Other exemptions from loading, storage, and placarding are described in Parts 74, 75, and 77 of this chapter.

(f) Uranium, normal or depleted, in solid form (not borings, chips, or pieces) must be packed in strong, tight, wooden or plywood boxes and as such are exempt from specification packaging and marking except for conformance with § 73.393 (c) and (d). Boxes weighing more than 500 pounds must be mounted

on skids. Boxes must be labeled as described in § 73.414(d). Other exemptions from loading, storage, and placarding are described in Parts 74, 75, and 77 of this chapter.

**§ 73.393 Packing and shielding.**

(a) Radioactive materials that present special hazards due to their tendency to remain fixed in the human body for long periods of time (i. e., radium, plutonium, and radioactive strontium, etc.) must, in addition to the packing hereinafter prescribed, be packed in inside metal containers specification 2R (§ 78.34 of this chapter), or other container approved by the Bureau of Explosives.

(b) All radioactive materials must be so packed and shielded that the degree of fogging of undeveloped film under conditions normally incident to transportation (24 hours at 15 feet from the package) will not exceed that produced by 11.5 milliroentgens of penetrating gamma rays of radium filtered by ½ inch of lead.

(c) The design and preparation of the package must be such that there will be no significant radioactive surface contamination of any part of the container.

(d) The smallest dimension of any outside shipping container for radioactive materials must be not less than 4 inches.

(e) All outside shipping containers must be of such design that the gamma radiation will not exceed 200 milliroentgens per hour or equivalent at any point of readily accessible surface. Containers must be equipped with handles and protective devices when necessary in order to satisfy this requirement.

(f) The outside shipping container for any radioactive material, unless specifically exempt by § 73.392 or unless approved by the Bureau of Explosives, shall be as follows:

(1) Spec. 15A, 15B, 19A, or 19B (§§ 78.168, 78.169, 78.190 or 78.191 of this chapter). Wooden boxes. Authorized for not more than 2,700 millicuries.

(2) Spec. 12B (§ 78.205 of this chapter). Fiberboard boxes. Authorized for not more than 2,700 millicuries.

(3) Spec. 21C (§ 78.224 of this chapter). Fiber drums. Authorized for not more than 2,700 millicuries. Authorized net weight not over 225 pounds.

(4) Spec. 6A, 6B, or 6C; 17C or 17H (single-trip) (§ 78.97, § 78.98, § 78.99, § 78.115, or § 78.118 of this chapter). Metal barrels or drums. Authorized for not more than 2,700 millicuries.

(5) Spec. 55 (§ 78.250 of this chapter), metal-encased, lead or uranium metal-shielded containers. Authorized for not more than 300 curies (see § 73.391). Containers must be equipped with a seal.

(g) Radioactive materials Group I, liquid, solid, or gaseous, must be packed in suitable inside containers completely surrounded by a shield of lead or other suitable material of such thickness that at any time during transportation the gamma radiation at one meter (39.3 inches) from any point on the radioactive source will not exceed 10 milliroentgens per hour. The shield must be so designed that it will not open or break under conditions incident to transportation. The minimum shielding must be sufficient to prevent the escape of any primary corpuscular radiation to the exterior of the outside shipping container.

(h) Radioactive materials Group II, liquid, solid, or gaseous, must be packed in suitable inside containers completely shielded so that at any time during transportation the radiation measured at right angles to any point on the long axis of the shipping container will not exceed the limits specified in subparagraphs (1) to (4) of this paragraph. The shielding must be designed so as to maintain its efficiency under conditions normally incident to transportation and must provide personnel protection against fast or slow neutrons and all other ionizing radiation originating in the radioactive materials or any part of the aggregate constituting the complete package.

(1) Gamma radiation of 10 mrhm.

(2) Electrically charged corpuscular radiation which is the physical equivalent (see note 1 of this paragraph) of 10 mrhm. of gamma radiation.

(3) Neutron radiation which is the physical equivalent (see Note 1 of this paragraph) of 2 mrhm. of gamma radiation.

(4) If more than one of the types of radiation named in subparagraphs (1), (2), and/or (3) of this paragraph is present the radiation of each type must be reduced by shielding so that the total does not exceed the equivalent of subparagraphs (1), (2), or (3) of this paragraph.

NOTE 1: For purposes of Parts 71–78 of this chapter the "physical equivalent" of a roentgen is that amount of radiation that would be absorbed in tissue to the extent of approximately 100 ergs per gram (mrhm. is an abreviation for milliroentgens per hour at 1 meter (39.3 inches)).

(i) Liquid radioactive materials Groups I, II or III must, in addition, be packed in tight glass, earthenware, or other suitable inside containers. The inside containers must be surrounded on all sides by an absorbent material sufficient to absorb the entire liquid contents and of such nature that its efficiency will not be impaired by chemical reaction with the contents. Where use of shielding is necessary to reduce radiation to limits prescribed by this section, the absorbent cushioning material must be placed within the shield. If the container is packed in a metal container specification 2R (§ 78.34 of this chapter) or other container approved by the Bureau of Explosives, the absorbent cushioning is not required.

(j) Radioactive materials Group III, liquid, solid or gaseous, must be packed in suitable inside containers completely wrapped and/or shielded with such material as will prevent the escape of primary corpuscular radiation to the exterior of the shipping container, and secondary radiation at the surface of the container must not exceed 10 milliroentgens per 24 hours, at any time during transportation.

(k) In determining compliance with requirements of paragraphs (e), (g), (h), and (j) of this section, measurements of radiation must be made with a Landsverk Electrometer Model L–75 or equally efficient standardized meter.

**§ 73.394 Radioactive materials labels.**

(a) Each outside container of radioactive material Group I or II, unless exempt by § 73.392, must be labeled with a properly executed label as described in § 73.414(a).

(b) Each outside container of radioactive material Group III must unless exempt by § 73.392, be labeled with a properly executed label as described in § 73.414 (b).

(c) Each bundle, box, barrel, or crate of magnesium-thorium alloys in formed shapes or uranium, normal or depleted, in solid metal form must be labeled with a label as described in § 73.414(d) unless exempt by § 73.392 (a) and (b).

**§ 73.395 Cleaning cars and vehicles.**

(a) Any box car or motor vehicle which, after use for the transportation of radioactive materials in carload or truckload lots, is contaminated with such materials to the extent that a survey of the interior surface shows that the beta-gamma radiation is greater than 10 milliroentgens physical equivalent in 24 hours or that the average alpha contamination is greater than 500 disintegrations per minute per 100 square centimeters shall be thoroughly cleaned in such a manner that a resurvey of the interior surface shows the contamination to be below these levels. A certificate to that effect must be furnished to the local agent of the carrier or to the driver of the motor vehicle. Cars and motor vehicles which are used solely for the transportation of radioactive materials are exempt from the provisions of this section.

**§ 73.396 Radioactive materials, handling.**

(a) When radioactive materials are loaded into railroad cars or motor vehicles by the shipper, the shipper shall observe all applicable requirements of Parts 74, 75, or 77 of this chapter, as the case may be.

## Subpart H—Marking and Labeling Explosives and Other Dangerous Articles

NOTE. The markings prescribed for containers should be as near together as possible.

**§ 73.400 Explosives.**

(a) Each package containing explosives must be marked with its proper shipping name as shown in § 72.5 of this chapter and such other marking as prescribed for the explosive in the shipment. Abbreviations must not be used. (See Note 1).

NOTE 1: In descriptions of ammunition, such as ammunition for cannon without projectiles, etc., the words with or without may be abbreviated as W or W/O, i. e., Ammunition for cannon W/O projectiles.

NOTE 2: Explosives in containers bearing markings prescribed by regulations in effect at the time of packaging may be shipped by the Departments of the Army, Navy or Air Force of the United States Government, in carload and truckload quantities only, without containers being remarked to comply

with regulations in effect at the time of shipment. The bill of lading or other shipping paper must describe the material by its proper shipping name as shown in § 72.5 of this chapter.

(b) Packages containing explosives must show on top the marking "THIS SIDE UP" when required by § 73.60 (e) (1) and §§ 73.63 (f) and 73.65 (i).

(c) Each package of explosives must show the name and address of the consignee except in carloads and truckloads or less-than-truckloads when handled by a motor vehicle not requiring transfer from one motor carrier to another. When offered for transportation by carrier by water each package must show the name or mark of the consignor and/or consignee.

(d) Each package of chemical ammunition, explosive, containing poisonous gases, solids or liquids, class A, class B or class C must also have securely attached to it labels prescribed by § 73.409 (a) (1), (a) (2), or (a) (3).

(1) Carload or truckload shipments of chemical ammunition, explosive, containing poisonous gases, solids or liquids, class A, class B, or class C offered for transportation by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government are exempt from labeling requirements when shipments are loaded or unloaded by the shipper or his duly authorized agent and such shipments are accompanied by qualified personnel supplied with equipment to repair leaks or other container failure which will permit escape of contents.

(e) Each shipment of samples of explosives when offered for transportation by carriers by rail express or water must bear the label prescribed by § 73.411 and each shipment of special fireworks in addition to the marking prescribed by § 73.91 (i) when offered for transportation by carriers by rail express or water must bear the label prescribed by § 73.410.

(f) Each shipment of explosive power devices class B, igniters, jet thrust (jato), class B explosives, jet thrust units (jato), class B explosives, propellant explosives, class B, or starter cartridges, jet engine, class B explosives, when offered for transportation by carriers by rail express, must bear the label prescribed by § 73.412.

(g) Each package of explosives must be marked with the I. C. C. specification number as prescribed by the specification, if an I. C. C. specification container is required.

### § 73.401 Dangerous articles.

(a) Packages containing flammable liquids, flammable solids, oxidizing materials, corrosive liquids, compressed gases, and poisons, as defined in this part must be marked, unless exempted, with the proper shipping name as shown in the commodity list (see § 72.5 of this chapter). For tank cars this marking must appear either on the placards or commodity cards.

(1) Every portable tank used for the transportation of any dangerous article shall be conspicuously and legibly marked on a background of sharply contrasting color with a sign or lettering on the tank with words as appropriate "CORROSIVE LIQUID", "COMPRESSED GAS", or "FLAMMABLE COMPRESSED GAS" and with the proper shipping name as shown in the commodity list (see § 72.5 of this chapter); the height of all required lettering shall be at least 2 inches or 1/10 the diameter of the tank, whichever is the greater; every portable tank container shall be marked with the owner's name; in addition to the markings hereinbefore required, there may be marked on any portable tank container the trademark appropriate to the commodity being transported therein: *Provided, however,* That no such marking shall be of such size and character as to render inconspicuous the required markings. No markings either required or permitted under the terms of this subparagraph shall be in lieu of any other marking or markings required by the Commission.

(b) Each package of dangerous articles must show the name and address of the consignee except in carloads and truckloads or less-than-truckloads when handled by a motor vehicle not requiring transfer from one motor carrier to another.

(c) Packages containing flammable liquids in inside containers of 1 quart capacity or larger, or corrosive liquids, acids, alkaline caustic liquids, liquid oxidizing materials and poisonous liquids in inside containers regardless of capacity, unless specifically exempted or otherwise provided in this part, must be packed with filling holes up, and except for carboys not completely boxed, the outside container must be plainly marked "This Side Up" or "This End Up" on the cover or top to indicate the position of the inside containers. This requirement does not apply to materials in inside metal cans of the nonrefillable type with spun-in head and base and having no replaceable cap or other closing device.

(d) Each package must show the specification marking as required if a specification container is prescribed.

(e) Additional shipping information not inconsistent with Parts 71–78 of this chapter may be shown on a container if so desired but no such label or marking shall be of a design, or form, or size, as may be confused with the marking required by Parts 71–78 of this chapter.

### § 73.402 Labeling dangerous articles.

(a) Each package containing any dangerous article as defined by Parts 71–78 of this chapter must be conspicuously labeled by the shipper as follows, except as otherwise provided:

(1) "Red label" as described in § 73.405 on containers of flammable liquids, except when exempted from the regulations by § 73.118. If flammable liquid is also a class A poison or a radioactive material poison D, the "poison gas" label or "Radioactive materials" label must also be applied to the package.

(2) "Yellow label" as described in § 73.406 on containers of flammable solids and oxidizing materials, except when exempted from the regulations by §§ 73.153 and 73.182. If flammable solid or oxidizing material is also a class A poison or a radioactive material poison D, the "poison gas" label or "radioactive materials" label must also be applied to the package.

(3) "White label" as described in § 73.407 (a) (1), (2) and (3) on containers of acids, alkaline caustic liquids or corrosive liquids, except when exempted from regulations by § 73.244. If the acid, alkaline caustic liquid or corrosive liquid is also a class A poison or a radioactive material poison D, the "poison gas" label or "radioactive materials" label must also be applied to the package.

(4) "Red label" as described in § 73.408 (a) (1) on containers of flammable compressed gases, except when exempted from the regulations by § 73.302. If the flammable compressed gas is also a class A poison or a radioactive material poison D, the "poison gas" label or "radioactive materials" label must also be applied to the package.

(5) "Green label" as described in § 73.408 (a) (2) on containers of nonflammable compressed gases, except when exempted from the regulations by § 73.302. If the nonflammable compressed gas is also a class A poison or a radioactive material poison D, the "poison gas" label or "radioactive materials" label must also be applied to the package.

(6) "Poison gas" label as described in § 73.409 (a) (1) on containers of class A poisons.

(7) "Poison" label as described in § 73.409 (a) (2) on containers of class B poison liquids or solids, except when exempted from the regulations by § 73.345 and § 73.364. If the class B poison liquid or solid is also a radioactive material poison D, the "radioactive materials" label must also be applied to the package.

(8) "Radioactive Materials" label as described in § 73.414 (a) on containers of class D poisons, Groups I and II, except when exempted by § 73.392.

(9) "Radioactive Materials" label as described in § 73.414 (b) on containers of class D poisons, Group III, except when exempted by § 73.392.

(10) "Radioactive materials" label as described in § 73.414(d) on bundles, boxes, barrels or crates of magnesium-thorium alloys as provided for by § 73.392(e).

(11) "Tear gas" label as described in § 73.409(a)(3) on containers of poisons, class C.

(12) "Bung label" as described in § 73.119(i) on metal barrels or drums containing flammable liquids with vapor pressure exceeding 16 pounds per square inch absolute.

(13) "Empty label" as described in § 73.413 must be applied to containers which have been emptied and on which the old label has not been removed, obliterated, or destroyed. It must be so placed on the container as to completely cover the old label.

(14) Labels authorized for shipments of explosives and other dangerous articles by air, as shown in §§ 73.405(b), 73.406(b), 73.407(b), 73.408(b), 73.409

(b), 73.410(b), 73.411(b), 73.412(b), and 73.414(c), may be used in lieu of labels otherwise prescribed for surface transportation to or from airport.

(b) Labels when applied to packages offered for transportation by rail express, rail baggage, or other forms of transportation for which a certified shipping order, bill of lading, or other shipping paper is not required, must show shipper's name in printing, stamping, or writing underneath the certificate printed thereon.

(1) Labels authorized for shipments of explosives and other dangerous articles by air are shown in §§ 73.405(b), 73.406(b), 73.407(b), 73.408(b), 73.409 (b), 73.410(b), 73.411(b), 73.412(b), and 73.414(c). Shipments so labeled must be tendered with a signed certificate, in duplicate, reading as follows (one signed copy shall accompany each shipment and the other signed copy shall be retained by the original carrier):

This is to certify that the contents of this package are properly described by name and are packed and marked and are in proper condition for transportation according to regulations prescribed by the Interstate Commerce Commission and the Administrator of the Federal Aviation Agency. (For shipments on passenger-carrying aircraft the following must be added to certificate: This shipment is within the limitations prescribed for passenger-carrying aircraft.)

(c) Labels and marking name of contents are not required on carload or truckload quantities of dangerous articles, except class A, class C, or class D poisons, by rail freight, rail express, or highway, when such shipments are unloaded by the consignee or his duly authorized agent from the car or motor vehicle in which originally loaded.

(1) Carload or truckload shipments of class A, class B, class C, or Class D poisons offered for transportation by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government are exempt from labeling requirements when shipments are loaded or unloaded by the shipper or his duly authorized agent and such shipments are accompanied by qualified personnel supplied with equipment to repair leaks or other container failure which will permit escape of contents.

(d) Except on class A, class C, or class D poisons, labels are not required on less-than-truckload shipments by motor vehicle by public highway when the articles are readily identifiable by reason of type of container or when the container is plainly marked to indicate its contents and;

(1) When the shipment is transported from origin to destination without transfer between vehicles and;

(2) When the shipper or its employees are in direct control or perform the loading, transporting and unloading.

(e) When it is known that subsequent shipments of these packages may be made by consignees in less-than-carload or less-than-truckload quantities, or in carload or truckload quantities to a point where they may be handled by other than the original consignee, the original shipper should attach labels to the packages as would be required for less-than-carload or less-than-truckload shipments.

### § 73.403 Labels for mixed packing.

(a) Use red label only when red and other labels are prescribed except when poison gas label or radioactive materials label are prescribed then both the red label and the poison gas label or red label and radioactive materials label must be used.

(b) Use white acid (alkaline caustic liquid or corrosive liquid) label only when white acid (alkaline caustic liquid or corrosive liquid) and yellow or poison labels are prescribed or poison labels (class B) are prescribed, except when poison gas label or radioactive materials label are prescribed then both the white acid label and the poison gas label or white acid and radioactive materials label must be used.

(c) Use yellow label only when yellow and poison labels are prescribed except when poison gas label or radioactive materials label are prescribed then both the yellow label and the poison gas label or the yellow label and the radioactive materials label must be used.

### § 73.404 Labels.

(a) Shippers must furnish and attach the labels prescribed for their packages. Labels should be applied to that part of the package bearing consignee's name and address.

(b) Labels must not be applied to packages containing articles which are not subject to Parts 71–78 of this chapter or are exempted therefrom.

(c) Shippers must not use labels which by their size, shape, and color, may readily be confused with the standard caution labels prescribed in this part.

(d) Labels must conform to standards as to size, printing, and color, and samples will be furnished, on request, by the Bureau of Explosives.

(e) A combination diamond-shaped label-tag of proper size and color, bearing on one side the shipping information and on the reverse side the wording prescribed in this part, will be permitted.

(f) As certification of compliance with regulations is also required by other Government agencies, and to avoid multiplicity of certifications, there may be added to the certificate on labels "and the Commandant of the Coast Guard," or "and the Administrator of the Federal Aviation Agency," or "and the Post Office Department," as is necessary.

(g) The carriers's name and stationery form number, or the shipper's name and address, may be printed on the labels, in type not larger than 10 point, if placed within the black-line border and in the upper or lower corner of the diamond.

(h) Labels remaining on hand and which were authorized by regulations in effect on December 31, 1950, may be used until present stocks are exhausted.

### § 73.405 Flammable liquids label.

(a) Labels for flammable liquids must be of diamond shape, bright red in color, and with each side 4 inches long. Printing must be in black letters inside of a black-line border measuring 3½ inches on each side and as shown in this section.

RED LABEL FOR FLAMMABLE LIQUIDS

(Reduced size)

(Black printing on red)

(b) Red label for flammable liquids for shipment by air.

Red and black with (black printing on red)

### § 73.406 Flammable solids and oxidizing materials label.

(a) Labels for flammable solids and oxidizing materials must be of diamond shape, bright yellow in color, and with each side 4 inches long. Printing must be in black letters inside of a black-line border measuring 3½ inches on each side and as shown in this section.

YELLOW LABEL FOR FLAMMABLE SOLIDS AND OXIDIZING MATERIALS

(Reduced size)

(Black printing on yellow)

(b) Yellow label for flammable solids and oxidizing materials for shipment by air.

Yellow and black with (black printing on yellow)

**§ 73.407 Acids, corrosive liquids, and alkaline caustic liquids label.**

(a) Labels for corrosive liquids, acids and alkaline caustic liquids must be of diamond shape, white in color, and with each side 4 inches long. Printing must be in black letters inside of a black-line border measuring 3½ inches on each side and as shown in this section.

(1) White label for acids:

(Reduced size)

(Black printing on white)

(2) White label for corrosive liquids.

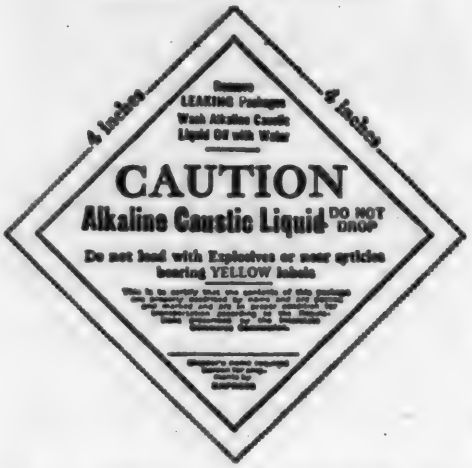
(Reduced size)

(Black printing on white)

(3) White label for alkaline caustic liquids.

(Reduced size)

(Black printing on white)




(b) Labels for shipments of acids, corrosive liquids, and alkaline caustic liquids by air must be as shown in the following:

(1) White label for acids for shipment by air.

(White and black with black printing on white)

(2) White label for corrosive liquids for shipment by air.

(White and black with black printing on white)

(3) White label for alkaline caustic liquids for shipment by air.

(White and black with black printing on white)

**§ 73.408 Compressed gas labels.**

(a) Labels for compressed gases must be of diamond shape, bright red in color for flammable gases and bright green for nonflammable gases, and with each side 4 inches long. Printing must be in black letters inside of a black-line border measuring 3½ inches on each side and as shown in this section.

(1) Red label for flammable gases.

(Reduced size)

(Black printing on red)

(2) Green label for nonflammable gases.

(Reduced size)

(Black printing on green)

(b) Red label for flammable gases for shipment by air.

Red and black with
(black printing on red)

(1) Green label for nonflammable gases for shipment by air.

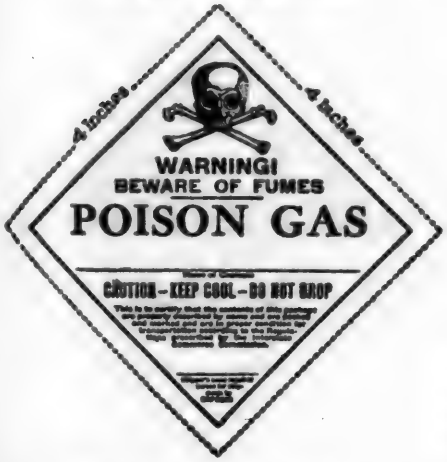
Green and black with
(black printing on green)

**§ 73.409 Poisonous articles and tear gas labels.**

(a) Labels for poisonous articles and tear gases must be of diamond shape, white in color, and with each side 4 inches long. Printing must be in red letters inside of a red-line border measuring 3½ inches on each side and as shown in this section.

(1) Poison gas label.

(Reduced size)
(Red printing on white)




(2) Poison label.

(Reduced size)
(Red printing on white)

(3) Tear gas label.

(Reduced size)
(Red printing on white)

(b) Label for shipment of poisonous articles, class B or class C, by air must be as shown in the following:

(1) Label for poisons for shipment by air.

White and red with (red printing on white)

**§ 73.410 Special fireworks label.**

(a) Labels for special fireworks must be square measuring 4 inches on each side and bright red in color. Printing must be in black letters inside of a black-line border measuring 3½ inches on each side as shown in this section.

RED LABEL FOR SPECIAL FIREWORKS

(Reduced size)
(Black printing on red)

4 INCHES
4 INCHES
SPECIAL FIREWORKS
HANDLE CAREFULLY
KEEP FIRE AWAY
DO NOT DROP nor THROW
This package must not be loaded or stored near steam pipes or other source of heat
This is to certify that the contents of this package are properly described by name and are packed and marked and are in proper condition for transportation according to the Regulations prescribed by the Interstate Commerce Commission.
(Shipper's Name)

(b) Explosives label for shipment of special fireworks by air.

(Black printing on red)

**§ 73.411 Explosives samples for laboratory examination label.**

(a) Labels for samples of explosives for laboratory examination must be square measuring 4 inches on each side and bright red in color. Printing must be in black letters inside of a black-line border measuring 3½ inches on each side and as shown in this section.

RED LABEL FOR SAMPLES OF EXPLOSIVES

(Reduced size)
(Black printing on red)

4 Inches
4 Inches
EXPLOSIVE
Sample for Laboratory Examination
HANDLE CAREFULLY
KEEP FIRE AWAY
This is to certify that the contents of this package are properly described by name and are packed and marked and are in proper condition for transportation according to the Regulations prescribed by the Interstate Commerce Commission.
(Shipper's Name)

(b) Explosives label for shipment of samples of explosives by air.

(Black printing on red)

**§ 73.412 Explosives, class B, label for express shipment.**

(a) Label for class B explosives, except special fireworks (see § 73.410), must be square measuring 4 inches on each side and bright red in color. Printing must be in black letters inside of a black-line border measuring 3½ inches on each side and as shown in this section.

(1) Red label for Class B explosives for express shipment.

(Reduced size)

(Black printing on red)

4 inches

EXPLOSIVES
CLASS B

HANDLE CAREFULLY
KEEP FIRE AWAY
DO NOT DROP OR THROW

This package must not be loaded or stored near steam pipes or other source of heat

This is to certify that the contents of this package are properly described by name and are packed and marked and are in proper condition for transportation according to the regulations prescribed by the Interstate Commerce Commission.

(Shipper's name)

4 inches

(b) Explosives label for shipment of class B explosives by air.

NOTE: No change in label.

(Black printing on red)

**§ 73.413 Empty container label.**

(a) Labels for empty containers must be not less than 6 inches on each side, white in color, and printed in letters not less than 1 inch high in black ink and as shown in this section.

WHITE LABEL FOR EMPTY CONTAINERS

(Reduced size)

(Black printing on white)

6 inches

EMPTY

6 inches

**§ 73.414 Radioactive materials labels.**

(a) Labels for radioactive materials (class D poisons) Group I and Group II must be of diamond shape, white in color, and with each side 4 inches long. Printing must be in red letters inside of a red-line border measuring 3½ inches on each side, as shown in this section.

LABEL FOR RADIOACTIVE MATERIALS
GROUP I OR II

(Reduced size)

(Red printing on white)

NOTE: This label must be duly executed by the shipper and the number of radiation units must be shown. For purposes of these regulations 1 unit equals 1 milliroentgen per hour at 1 meter for hard gamma radiation or the amount of radiation which has the same effect on film as 1 mrhm of hard gamma rays of radium filtered by ½ inch of lead.

(b) Labels for radioactive materials (class D poisons) Group III must be of diamond shape, white in color, and with each side 4 inches long. Printing must be in blue letters inside of a blue-line border measuring 3½ inches on each side, and as shown in this section.

LABEL FOR RADIOACTIVE MATERIALS
GROUP III

(Reduced size)

(Blue printing on white)

(c) Label for Radioactive Materials Groups I and II for shipment by air.

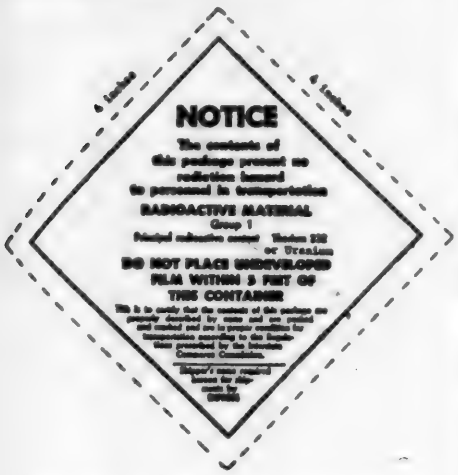
Red and white with (red printing on white)

NOTE 1: This label must be duly executed by the shipper and the number of radiation units must be shown. For purposes of these regulations 1 unit equals 1 milliroentgen per hour at 1 meter for hard gamma radiation or the amount of radiation which has the same effect on film as 1 mrhm of hard gamma rays of radium filtered by ½ inch of lead.

(1) Label for Radioactive Materials Group III for shipment by air.

Blue and white with (blue printing on white)

(d) Label for radioactive material, such as magnesium-thorium alloys in formed shapes or uranium, normal or depleted, in solid metal form (see § 73.392 (e) or (f)), must be of diamond shape, white in color, and with each side 4 inches long. Printing must be in red letters inside of a red-line border measuring 3½ inches on each side, as shown in this paragraph.


4 inches
4 inches
NOTICE
The contents of this package present no radiation hazard to personnel in transportation
RADIOACTIVE MATERIAL
Group I
Natural uranium metal Thorium 232 or Uranium
DO NOT PLACE UNDEVELOPED FILM WITHIN 3 FEET OF THIS CONTAINER
This is to certify that the contents of this package are properly described by name and are packed and marked and are in proper condition for transportation according to the Interstate Commerce Commission.
Shipper's name marked hereon by the consignor

## Subpart I—Shipping Instructions

### § 73.425 "Order-Notify," "C.O.D.," and "Stop-off" shipments.

(a) Except on through bills of lading to a foreign country, shipments of explosives, class A and blasting caps in any quantity must not be offered for transportation by carriers by rail freight or rail express when consigned "to order notify" or "C.O.D.". Shippers must not consign these shipments to themselves at points where they have not a resident representative.

(b) Explosives, class A must not be offered for transportation by carriers by rail freight or rail express subject to "stop-off" privileges en route for partial loading or unloading.

### § 73.426 Cars containing lading which has been fumigated or treated with flammable liquids, flammable gases, poisonous liquids or solids, or poisonous gases.

(a) Delivery to carrier of cars containing lading fumigated or treated with flammable liquid or flammable gas is prohibited until 48 hours have elapsed after such fumigation or treatment, or until car has been ventilated so as to remove danger of fire or explosion due to the presence of flammable vapors.

(b) Cars containing lading which has been fumigated or treated with poisonous liquid, solid, or gas, such as carbolic acid, liquid or solid, chlorpicrin, hydrocyanic acid, methyl bromide, etc., must be placarded on each door or near thereto with placard reading as follows (for cleaning cars, see § 74.566 of this chapter):

(Reduced size)

(Red lettering on white cardboard)

10 inches

8 inches

DANGER

The lading of this car has been FUMIGATED or TREATED with

(Name of poisonous liquid, solid, or gas)

BEFORE UNLOADING, open both doors and DO NOT ENTER until car is free of gas. REMOVE ALL POISONOUS MATERIAL before release of empty car.

### § 73.427 Shipping order and bill of lading description.

(a) The shipper when offering for transportation by carriers by rail freight, rail express, highway, or water any class A, class B, or class C explosive, flammable liquid, flammable solid, oxidizing material, corrosive liquid, compressed gas, or poison, as defined by this part, must describe such article in the shipping order, bill of lading or other shipping paper by the shipping name used in § 72.5 (see commodity list) of this chapter and may add a further description not inconsistent therewith. Abbreviations must not be used. For shipments of blasting caps and/or electric blasting caps the shipper must, in addition, show the number of caps in the shipment.

NOTE 1: In commodity list (§ 72.5 of this chapter) shipping names are shown in roman, not *italics*.

### § 73.428 Label or placard notation.

(a) The shipping order, bill of lading or other shipping paper must also show thereon in connection with and following the entry of the article as prescribed in § 73.427, the color or kind of label applied, and for cars containing such articles loaded by the shipper, requiring placards the kind of placard applied to the car.

### § 73.429 Receipts; rail express shipments.

(a) A receipt upon the form prescribed by the originating rail express carrier must be issued to the shipper for each express shipment of explosives or other dangerous articles accepted for transportation. Before a receipt is issued, the shipper must apply the label prescribed in this part to each package containing any article requiring a label under Parts 71–78 of this chapter.

(b) Each receipt must show the proper and definite name of commodity, as listed in § 72.5 of this chapter, and the color or kind of label applied to the package if any is required. Abbreviations must not be used.

### § 73.430 Certificate.

(a) The shipper offering for transportation by carriers by rail freight, highway, water, or air, any class A or class B explosive and blasting caps or electric blasting caps in any quantity, and any flammable liquid, flammable solid, oxidizing material, corrosive liquid, compressed gas, or poison, requiring labels, or carloads requiring placards, as prescribed by Parts 71–78 of this chapter, must show on the shipping order, bill of lading, or other shipping paper, in the lower left-hand corner, the following certificate over the written or stamped facsimile signature of the shipper or his duly authorized agent:

This is to certify that the above named articles are properly described, and are packed and marked and are in proper condition for transportation according to the regulations prescribed by the Interstate Commerce Commission.

(b) For the relief of shippers from multiplicity of certifications required for packages which may move by various means of transportation, shipments may be certified for rail, motor vehicle, water, or air transportation by adding to the certificate required on the shipping document "and the Commandant of the Coast Guard," or "and the Administrator of the Federal Aviation Agency," as the case may be.

(c) Shipping papers for shipments made by air between the United States and other countries shall be certified in duplicate with certificate signed by the shipper reading as follows:

This is to certify that the contents of this package are properly described by name and are packed and marked and are in proper condition for transportation according to the regulations prescribed by the Interstate Commerce Commission and the Administrator of the Federal Aviation Agency. (For shipment on passenger-carrying aircraft the following must be added to certificate: This shipment is within the limitations prescribed for passenger carrying aircraft.)

### § 73.431 Switching ticket.

(a) When the initial movement is a switching operation, the switching order, switching receipt or switching ticket, and copies thereof, prepared by the shipper, must bear the placard indorsement and the shipper's certificate prescribed by §§ 73.430 and 74.584 (a) and (b) of this chapter.

### § 73.432 Tank car shipments.

(a) Tank cars containing flammable liquids or flammable poison gas having a flash point of 80° F. or below, except liquid road asphalt or tar, must not be offered for shipment unless originally consigned or subsequently reconsigned to parties having private-siding (see Note 1 of this section) or to parties using railroad-siding facilities which have been equipped for piping the liquid from tank cars to permanent storage tanks of sufficient capacity to receive contents of car.

(b) A tank car containing any compressed gas must not be offered for transportation unless the car is consigned for delivery (see paragraph (c) of this section) and unloading on a private track (see Note 1 of this section),

except that where no private track is available, delivery and unloading on carrier tracks is permitted provided the following conditions are complied with:

(1) Any tank car of ICC–106A or 110A type (see § 78.275, § 78.276 or § 78.293 of this chapter) may be offered for transportation and the loaded unit tanks may be removed from car frame on carrier tracks, provided the shipper has obtained from the delivering carrier and filed with originating carrier, written permission (see Note 2 of this section) for such removal. The consignee must furnish adequately safe mechanical hoist, obtained from the carrier if desirable, by which the tanks shall be lifted from the car and deposited directly upon vehicles furnished by the consignee for immediate removal from carrier property or tanks must be lifted by adequately safe mechanical hoist from car directly to vessels for further transportation.

(c) Any tank car of other than ICC–106A or 110A type (see § 78.275, § 78.276, or § 78.293 of this chapter), containing anhydrous ammonia, liquefied hydrocarbon or liquefied petroleum gas, and having interior pipes of liquid and gas discharge valves equipped with check valves, may be consigned for delivery and unloading on carrier tracks, if the lading is piped directly from the car to permanent storage tanks of sufficient capacity to receive the entire contents of the car. Such cars may also be consigned for storage on a private track or on a carrier track when designated by the carrier for such storage.

(d) For cars of the ICC–106A or 110A type (see § 78.275, § 78.276 or § 78.293 of this chapter), the tanks must be placed in position and attached to the car structure by the shipper.

(e) Flammable liquids must not be loaded into tank cars on carriers' property from tank trucks, wagons or drums.

NOTE 1: For this purpose, a private track is a track outside of carrier's right-of-way, yard, and terminals, and of which the carrier does not own either the rails, ties, roadbed or right-of-way; or a track or portion of a track which is devoted to the purpose of its user, either by lease or written agreement; in which case the lease or written agreement will be considered as equivalent to ownership.

NOTE 2: Carriers should give permission for the unloading of these containers on carrier tracks only where no private siding is available within reasonable trucking distance of final destination. The danger involved is the release of compressed gases due to accidental injury to container in handling. The exposure to this danger decreases directly with the isolation of the unloading point.

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# PART 74—CARRIERS BY RAIL FREIGHT

Sec.


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AUTHORITY: The provisions of this Part 74 issued under 62 Stat. 738, 74 Stat. 808; 18 U.S.C. 834.

## § 74.500 Purpose of the regulations in Parts 71–78 of this chapter.

(a) To promote the uniform enforcement of law and to minimize the dangers to life and property incident to the transportation of explosives and other dangerous articles by rail freight carriers engaged in interstate or foreign commerce, Parts 71–78 of this chapter are prescribed to define these articles for transportation purposes and to state the precautions that must be observed by the carrier in handling them while in transit. It is the duty of each such carrier to make the prescribed regulations effective and to thoroughly instruct employes in relation thereto.

## § 74.501 Acceptable articles.

(a) Explosives, including samples of explosives and explosive articles not exceeding 5 pounds net weight and other dangerous articles may be accepted and transported, provided they are in proper condition and are certified for transportation by rail, highway, or water. Articles must be loaded, stayed, and handled in transit according to regulations applying to service or services used. Methods of manufacture, packing, and storage, in so far as they affect safety in transportation, must be open to inspection by a duly authorized representative of the initial carrier or by the Bureau of Explosives. Shipments of explosives or other dangerous articles not in proper condition for transportation, or loaded or stayed as required, or certified as to proper packing, marking and description as required in Parts 71–78 of this chapter, must not be accepted for transportation or transported.

## § 74.502 Forbidden explosives.

(a) The acceptance of the following articles for transportation by common carrier by rail freight, is forbidden:

(1) Diazodinitrophenol, dry.

(2) Dynamite, except gelatin dynamite, containing over 60 percent of liquid explosive ingredient.

(3) Dynamite having an unsatisfactory absorbent, or one that permits leakage of a liquid explosive ingredient under any conditions liable to exist during transportation or storage.

(4) Explosive compositions that ignite spontaneously or undergo marked decomposition when subjected for 48 consecutive hours to a temperature of 75° C. (167° F.).

(5) Explosives containing an ammonium salt and a chlorate.

(6) Explosives condemned by the Bureau of Explosives (except properly

packaged samples for laboratory examinations).

(7) Explosives not packed, marked, described, and certified, in accordance with Parts 71–78 of this chapter.

(8) New explosives (except samples for laboratory examination (see § 73.86 of this chapter)) until approved for transportation by the Bureau of Explosives.

(9) Condemned or leaking dynamite must not be repacked and offered for shipment unless the repacking is done by a competent person in the presence of, or with the written consent of, an inspector, or with the written authority of the chief inspector, of the Bureau of Explosives.

(10) Leaking or damaged packages of explosives must not be accepted for transportation or transported by rail. Should any package of high explosives when offered for shipment show excessive dampness or be moldy or show outward signs of any oily stain or other indication that absorption of the liquid part of the explosive is not perfect, or that the amount of the liquid part is greater than the absorbent can carry, the package must be refused in every instance. The shipper must substantiate any claim that a stain is due to contact with material other than the liquid explosive ingredient of an explosive. In case of doubt the package must be rejected.

(11) Firecrackers, flash crackers, or salutes, the explosive contents of which exceed 12 grains each in weight.

(12) Fireworks that combine an explosive and a detonator or blasting cap.

(13) Fireworks containing an ammonium salt and a chlorate.

(14) Fireworks containing yellow or white phosphorus.

(15) Fireworks or fireworks compositions that ignite spontaneously or undergo marked decomposition when subjected for 48 consecutive hours to a temperature of 75° C. (167° F.).

(16) Fireworks properly condemned by the Bureau of Explosives, except properly repacked samples for laboratory examinations.

(17) Toy caps containing more than an average of twenty-five hundredths of a grain of explosive composition per cap.

(18) Toy torpedoes the maximum outside dimension of which exceeds ⅞ inch, or toy torpedoes containing a mixture of potassium chlorate, black antimony and sulfur with an average weight of explosive composition in each torpedo exceeding four grains.

(19) Toy torpedoes containing a cap composed of a mixture of red phosphorus and potassium chlorate exceeding an average of one-half (0.5) grain per cap.

(20) Fulminate of mercury, dry.

(21) Guanyl nitrosamino guanylidene hydrazine, dry.

(22) Lead azide, dry.

(23) Lead styphnate (lead trinitroresorcinate), dry.

(24) Nitroglycerin, liquid.

(25) Nitro mannite, dry.

(26) Nitrosoguanidine, dry.

(27) Pentaerythrite tetranitrate, dry.

(28) Tetrazene (guanyl nitrosamino guanyl tetrazene, dry.

(29) Fireworks containing copper sulfate and a chlorate.

### § 74.503 "Order-Notify", "C.O.D.", and "Stop-off" shipments.

(a) Except on through bills of lading to a foreign country, shipments of explosives, class A, and blasting caps in any quantity must not be accepted for transportation or transported by carrier by rail freight when consigned "to order notify" or "C.O.D.". Shippers must not consign these shipments to themselves at points where they have not a resident representative.

(b) Explosives, class A, must not be accepted for transportation or transported by carrier by rail freight subject to "stop-off" privileges en route for partial loading or unloading.

### § 74.504 Carriers' material and supplies.

(a) Parts 71–78 of this chapter apply also to shipments of carriers' material and supplies moving by rail.

### § 74.505 Canadian shipments.

(a) Explosives and other dangerous articles as defined in Parts 71–78 of this chapter, which are packed, marked, labeled, and loaded, in conformity with the regulations of the Board of Transport Commissioners for Canada, may be accepted and carried by carriers from point of entry in the United States to their destination in the United States or through the United States en route to a point in Canada.

NOTE 1: Because of the present emergency and until further order of the Commission, compressed gas cylinders 40 inches in length and 8 inches in diameter, charged with not more than 40 pounds of carbon dioxide or when charged with nitrogen not in excess of 2,000 pounds per square inch, and shipped by or to the Canadian Department of National Defense in accordance with Board of Transport Commissioners for Canada Order No. 76253 dated Mar. 10, 1951, may be shipped to destinations in the United States or through the United States to points in Canada.

### § 74.506 Improperly packed or damaged shipments in transportation.

(a) For the protection of the public against fire, explosion, or other, or further hazard with respect to shipments of explosives or other dangerous articles offered for transportation or in transit by any carrier by railroad, such carrier shall make immediate report to the Bureau of Explosives, 63 Vesey Street, New York 7, New York, for handling any of the following emergency matters coming to their attention:

(1) Instances of packages of explosives or other dangerous articles discovered in transit not properly prepared for transportation in accordance with applicable regulation in Parts 71–78 of this chapter.

(2) Railroad wrecks or accidents involving damage to containers of explosives or other dangerous articles to such a degree as to necessitate repacking of the articles. (See § 74.588.)

(3) Other like emergencies in which any carrier by railroad is or is likely to become involved, or may offer aid at its command.

(b) This section shall in no respect excuse either shipper or carrier by railroad for failure to exercise due care to prevent any departure from any regulation prescribed in Parts 71–78 of this chapter.

### § 74.507 Labels.

(See §§ 73.405 to 73.414 of this chapter for description of labels.)

(a) Carriers must keep on hand an adequate supply of labels. Lost or detached labels must be replaced from information given on revenue or other waybill, manifest, memo or other shipping paper.

(b) The carrier's name and stationery form number may be printed on the labels, in type not larger than 10 point, if placed within the black-line border and in the upper or lower corner of the diamond.

### § 74.508 Violations and accidents to be reported.

(a) Serious violations of Parts 71–78 of this chapter (such as defective packing, improper staying, or rough treatment of car), and accidents, fires or explosions, and leaking or broken containers occurring in connection with the transportation or storage on carrier's property of explosives or other dangerous articles, must be reported promptly by the rail carrier to the Bureau of Explosives.

(b) The Bureau of Explosives, upon receipt of reports from carriers should promptly report to the shipper full particulars covering all cases of defective packing, improper staying, leaking and broken shipping containers and rough treatment of cars resulting in leakage or damage to shipping containers or staying.

### § 74.509 Quantity limitations.

(a) When quantity limitations are specified in Parts 71–78 of this chapter by United States liquid measure or by avoirdupois weight it is authorized that quantities measured by the metric system may be substituted, up to but not exceeding 1 gallon for liquid and 10 pounds for solids, on the basis of 1 liter per quart specified and 500 grams per pound specified.

## Subpart A—Loading, Unloading, Placarding and Handling Cars; Loading Packages Into Cars

### § 74.525 Loading packages of explosives in cars, selection, preparation, inspection and certification.

(a) Except as provided in § 74.526 (b), (n), and (o), explosives, class A, must be loaded in closed cars, certified and placarded "Explosives."

(b) Certified closed cars must be inspected inside and outside, other cars must be inspected as applicable to the type of car, and must conform to the following specifications:

(1) Closed cars of not less than 80,000 pounds capacity, with steel underframes and friction draft gear, must be used when available, except that on narrow-gage and other railroads, explosives may be transported in cars of less than that

capacity, provided the available cars of greatest capacity and strength are used for this purpose.

(2) Must be equipped with air brakes and hand brakes in condition for service.

(3) Must have no loose boards or cracks in the roof, sides, or ends, through which sparks may enter, or unprotected decayed spots liable to hold sparks and start a fire.

(4) The roof of the car must be carefully inspected from the outside for decayed spots or broken boards, especially under or near the running board, and such spots must be covered or repaired to prevent their holding fire from sparks. A car with a roof generally decayed, even if tight, must not be used.

(5) The doors must shut so closely that no sparks can get in at the joints, and, when necessary, they must be stripped. The stripping for doors should be on the inside and be fastened to the door frames where it will form a shoulder against which the closed doors are pressed by means of wedges or cleats in door shoes or keepers. The openings under the doors should be similarly closed. The hasp fastenings must be examined with doors closed and fastened, and the doors must be cleated when necessary to prevent doors shifting. When the car is opened for any cause, wedges or cleats must be replaced before car containing explosives is permitted to proceed.

(6) The journal boxes and trucks must be carefully examined and put in such condition as to reduce to a minimum the danger of hotboxes or other failure necessitating the setting out of the car before reaching destination. The lids or covers of journal boxes must be in place.

(7) The car must be carefully swept out before it is loaded. For less-than-carload shipments the space in which the packages are to be loaded must be carefully swept.

(8) Holes in the floor or lining must be repaired and special care taken to have no projecting nails or bolts or exposed pieces of metal which may work loose or produce holes in packages of explosives during transit. Protruding nails in the floor or lining which have worked loose must be drawn, and if necessary for the purpose of fastening the floor or lining, new nails must be driven through other parts thereof.

(9) Metal floor plates must be completely covered with wood, plywood, or fiber or composition sheets of adequate thickness and strength to prevent contact of the floor plates with the packages of explosives under conditions incident to transportation, except that the covering of metal floor plates is not necessary for carload shipments loaded by the Department of the Army, Navy, or Air Force of the United States Government provided the explosives are of such nature that they are not liable to leakage of dust, powder, or vapor which might become the cause of an explosion.

(10) Cars equipped with automobile loading devices must not be used unless the loading device is securely attached to the roof of car with fastenings supplementing those already provided and so fixed that it cannot fall.

(11) The carrier must have the car examined by a competent employe to see that it is properly prepared, and must have a "Car Certificate" signed in triplicate upon the prescribed form (see paragraph (c) (2) and (3) of this section) before permitting the car to be loaded.

(12) Except as provided in § 74.584 (h), a car must not be loaded with any explosives, class A, until it shall have been thoroughly inspected by a competent employee of the carrier who shall certify as to its proper condition under this section and shall sign certificate No. 1 prescribed in paragraph (c) (2) and (3) of this section.

(c) After a certified car as prescribed in this section has been furnished by the carrier, the shipper or his authorized employe must, before commencing the loading of any such car, inspect the interior thereof and after loading, certify to the proper condition as specified in paragraph (b) of this section by signing certificate No. 2 of the car certificate prescribed by subparagraphs (2) and (3) of this paragraph.

(1) For all shipments loaded by the shipper, a competent employee of the carrier must inspect the finished load and certify to its compliance with this part before the car shall be accepted for transportation; and certificate No. 2 as prescribed by subparagraphs (2) and (3) of this paragraph shall be signed before the car is permitted to go forward. When a car is loaded by the carrier, certificate No. 2 must be signed only by the representative of the carrier.

(2) The certificates as prescribed in subparagraph (3) of this paragraph must not be signed by the carrier's or shipper's representative unless the condition of any car covered thereby meets the requirements of this part.

(3) Car certificate: The following certificate, printed on strong tag board measuring 7 by 7 inches, or 6 by 8 inches, must be duly executed in triplicate by the carrier, and by the shipper, if he loads the shipment; the original must be filed by the carrier at the forwarding station on a separate file; and the other two must be attached, one to each outer side of car to the fixed placard board or to the side of wooden car between car initials and the car door, or as otherwise provided. (See § 74.549.)

---------- Railroad

CAR CERTIFICATE

No. 1 ---------- Station, ----------, 19--

I hereby certify that I have this day personally examined Car Number ------ and that, as applicable to the type of car, there are no holes or other openings in the roof, sides, ends or car lining, through which sparks might enter; that the floor is clean and in good condition and it and the car lining are free of projecting uncovered pieces of metal or nails; that I have examined all the journal boxes and that they are properly covered, packed and oiled and that the air brakes and hand brakes are in condition for service.

----------
(Railway employee inspecting car)

No. 2 ---------- Station, ----------, 19--

I have this day personally examined the above car and hereby certify that the explosives in or on this car; or in or on vehicles or in containers; have been loaded and braced, and that placards have been applied, according to the regulations prescribed by the Interstate Commerce Commission; that the doors of cars so equipped fit or have been stripped so that sparks cannot enter.

----------
(Shipper or his authorized agent)

----------
(Railway employee inspecting bracing)

NOTE 1: A shipper must decline to use a car not in proper condition.

No. 3 ---------- Station, ----------, 19--

I hereby certify that I have this day personally supervised the loading of the vehicles or containers on and their securement to the above car.

----------
Shipper or railway employee inspecting loading and securement

NOTE 1: All certificates, where applicable, must be signed.

(4) Car certificates remaining on hand and which were authorized by regulations in effect prior to (March 18, 1964), may be used for closed car inspections until stocks are exhausted.

**§ 74.526 Loading explosives into cars.**

(a) Boxes or other containers of class A explosives named in §§ 73.53 to 73.87 of this chapter when marked "This Side Up" must be loaded accordingly. Boxes may be loaded crosswise or lengthwise of the car, but not so that the ends of wooden boxes will bear against the sides of fiberboard boxes, or so that the end of any box will cause a high pressure on a small area of another box.

(b) Shipments of explosive bombs, unfuzed explosive projectiles, rocket ammunition, and jet thrust units when not packed in wooden boxes, and large metal containers of incendiary bombs weighing 500 pounds or more, each, may be loaded in stock cars or in gondola cars (flat bottom) when adequately braced. Wooden boxed bombs, rocket ammunition, or jet thrust units which, due to size, cannot be loaded in closed cars may be loaded in open-top cars or on flat cars but must be protected against accidental ignition.

(c) Boxes of high explosives, low explosives, or black powder, packed in long cartridges, bags, or siftproof liners, and containing no liquid explosive ingredient, may be loaded on their sides or ends, but not so that the end of a box will cause a high pressure on a small area of another box.

(d) Explosives for which a certified and placarded car is prescribed (see § 74.525 (a)) must not be loaded higher than the permanent car lining unless additional lining is provided as high as the lading.

(e) When the lading of a car consists of or includes any explosives, the weight of the lading should be distributed so

that it will be equalized on each side of the car and over the trucks.

(f) Explosives packed in metal kegs, except when boxed, must be loaded on their sides with ends towards ends of the car; packages of explosives must not be placed in the space opposite the doors unless the doorways are boarded on the inside as high as the lading. (This does not apply to palletized packages provided they are braced so that they cannot fall or slide into the doorways during transit.)

(g) Wooden or fiber kegs, barrels, or drums, may be loaded on their sides or ends, as will best suit the conditions.

(h) Packages containing any of the explosives for the transportation of which a certified and placarded car is prescribed (see § 74.525) and blasting caps or electric blasting caps in any quantity, must be stayed (blocked and braced) by the one who loads the car, so as to prevent change of position by the ordinary shocks incident to transportation. Special care must be used to prevent such packages from falling to the floor or from having anything fall on them or slide against them during transit. (See note 1.)

NOTE 1: For recommended methods of blocking and bracing, see Bureau of Explosives' Pamphlets 6 and 6A.

(i) To prevent delays to local freight trains, when there are shipments of explosives for different destinations loaded in a "peddler car" or "way car", the shipments for each destination must be stayed separately.

(j) Forwarding and transfer stations for explosives must be provided with the necessary materials for staying.

(k) Shippers must furnish the material for staying packages of explosives loaded by them.

(l) Explosives, class A, must not be loaded, transported, or stored in cars equipped with any type of lighted heater or open-flame device, or electric devices having exposed heating coils, or in cars equipped with any apparatus or mechanism utilizing an internal combustion engine in its operation.

(m) Blasting caps or electric blasting caps in quantity not exceeding 1,000 caps may be loaded in any closed car which is in good condition, without car certificates or placards.

(n) Container cars or portable containers on flat cars or gondola cars (drop-bottom cars not authorized), when properly loaded, blocked, and braced to prevent change of position under conditions incident to normal transportation, may be used for any class A explosive except black powder packed in metal containers. Portable containers must be of a type approved by the Bureau of Explosives. They must be designed and maintained so as to be weather-tight and so constructed that sparks cannot enter. Wooden containers must be painted or treated with fire-retardant material of a type approved by the Bureau of Explosives.

(1) Portable containers must be of such design and so braced that there will be no evidence of failure of the container or the bracing when subjected to impact from each end of at least 8 miles per hour. Efficiency shall be determined by actual test, using dummy loads equal in weight and general character to material to be shipped.

(2) Container cars or cars which are loaded with portable containers must be placarded with the "Explosives" placards as prescribed in § 74.550 and properly executed car certificates as required by § 74.525.

(3) Lading shall be so loaded, blocked, and braced within the container that it will not change position under impact from each end of at least 8 miles per hour.

(o) Explosives, class A, may be loaded and transported in tight, closed truck bodies or trailers on flat cars and wooden boxed bombs, rocket ammunition, or jet thrust units which, due to their size, cannot be loaded in tight, closed truck bodies or trailers may be loaded in or on open-top truck bodies or trailers but must be protected against accidental ignition, provided all of the following requirements are fulfilled and provided wooden containers are painted or treated with fire-retardant material of a type approved by the Bureau of Explosives:

(1) Truck body or trailer must meet the requirements of Part 77 of this chapter, applicable to shipments of explosives by motor vehicle.

(2) Truck body or trailer shall be so secured on the car that it will not permanently change position or show evidence of failure or impending failure of the method of securing truck body or trailer under impact from each end of at least 8 miles per hour. Efficiency shall be determined by actual test, using dummy loads equal in weight and general character to the material to be shipped.

NOTE 1: For recommended methods of blocking and bracing see Bureau of Explosives' Pamphlet 6C.

(3) Lading shall be so loaded, blocked, and braced within or on the truck body or trailer that it will not change position under impact from each end of at least 8 miles per hour.

NOTE 1: For recommended methods of blocking and bracing see Bureau of Explosives' Pamphlet 6C. Impact tests have been conducted on methods shown in this pamphlet.

(4) Cars or truck bodies or trailers on cars must be placarded with the "Explosives" placards as prescribed in § 74.550 and properly executed car certificates as required by § 74.525.

(5) All fuel tanks for heaters or refrigerating machinery with which truck bodies or trailers are equipped shall be drained and all automatic heating or refrigerating machinery shall be rendered inoperative by disconnection of the automatic controls or the source of power for their operation.

### § 74.527 Forbidden mixed loading and storage.

(a) Explosives, class A, and initiating or priming explosives must not be transported in the same car with, nor be stored on railway property near, any of the dangerous articles other than explosives for which red, yellow, green, white (acid or corrosive liquid) or radioactive material labels are prescribed in Parts 71–78 of this chapter, nor with charged electric storage batteries.

(b) Explosives must not be loaded together nor with other dangerous articles, except as provided in the loading and storage chart (see § 74.538). See § 74.584 (h) for loading shipments of explosives or any other material in a placarded and certified car containing a shipment of class A explosives.

### § 74.528 Protect explosives from injury.

(a) In a car containing explosives, the explosives and all other freight must be so loaded, and if necessary so braced and stayed, as to prevent injury to packages of explosives during transit. When practicable, explosives should be loaded so as to avoid transfer at stations.

### § 74.529 Cars for class B explosives.

(a) Explosives, class B, must not be loaded, transported, or stored in cars equipped with any type of lighted heater or open-flame device, or in cars equipped with any apparatus or mechanism utilizing an internal combustion engine in its operation.

(b) Shipments of class B explosives (see §§ 73.88 to 73.94 of this chapter) must be loaded in a closed car or container car which is in good condition, into which sparks cannot enter, and with roof not in danger of taking fire through unprotected decayed wood. These cars do not require the car certificate but must have attached to both sides and both ends the "DANGEROUS" placard prescribed by § 74.552, and the doors if not tight must be stripped to prevent entrance of sparks.

(c) Explosives, class B, may be carried in tight, closed truck bodies or trailers on flat cars provided all automatic heating or refrigerating machinery with which truck bodies or trailers are equipped shall be rendered inoperative. Packages of explosives shall be so braced and stayed as to prevent their movement and so as to prevent injury to them due to movement of other freight during transit. Ends, side walls, or doors of truck bodies or trailers shall not be relied upon to prevent the shifting of heavy loads unless adequately designed. "Dangerous" placards prescribed by § 74.552 must be securely attached to the car or truck body or trailer so as to be visible from both sides and ends of the car.

NOTE 1: For recommended methods of blocking and bracing see Bureau of Explosives' Pamphlet 6C.

### § 74.530 Cars for class C explosives.

(a) Explosives, class C, may be loaded into any closed car in good condition. With the exception of blasting caps and electric blasting caps, explosives, class C, may be loaded into any container car in good condition. No placards or car certificates are required.

(b) Explosives, class C, may be carried in tight, closed truck bodies or trailers on flat cars provided all automatic heating

or refrigerating machinery with which truck bodies or trailers are equipped shall be rendered inoperative. Ends, side walls, or doors of truck bodies or trailers shall not be relied upon to prevent the shifting of heavy loads unless adequately designed.

NOTE 1: For recommended methods of blocking and bracing see Bureau of Explosives' Pamphlet 6C.

**§ 74.531 Lights.**

(a) When necessary to use lights while handling explosives, it is recommended that where practicable incandescent electric lights be provided.

**§ 74.532 Loading other dangerous articles.**

(a) Shipments must be properly loaded in closed cars, container cars, or in tight closed truck bodies or trailers on flat cars, except as otherwise provided in Parts 71–78 of this chapter and cars placarded as prescribed, when accepted by carriers. Ends, side walls, or doors of truck bodies or trailers shall not be relied upon to prevent the shifting of heavy loads unless adequately designed.

NOTE 1: See Bureau of Explosives' Pamphlet No. 6 for recommended methods of blocking and bracing articles in cars. See loading and storage chart (§ 74.538) before loading labeled articles together or with explosives named in §§ 73.53 to 73.114 of this chapter.

NOTE 2: For recommended methods of blocking and bracing, in truck bodies or trailers on flat cars, see Bureau of Explosives' Pamphlet 6C.

(1) Shippers must furnish the material for staying packages of other dangerous articles loaded by them.

(b) Flammable liquids (red label) and flammable compressed gases (red gas label) must not be loaded, transported, or stored in cars equipped with any type of lighted heater or open-flame device, or in cars equipped with any apparatus or mechanism utilizing an internal combustion engine in its operation.

(1) Flammable liquids (red label) and flammable gases (red label) must not be loaded in truck bodies or trailers equipped with lighted heaters or any automatic heating or refrigerating apparatus when such truck bodies or trailers are loaded on flat cars.

(c) Packages protected by labels or exempted from labels by § 73.402(c) of this chapter must be so loaded that they cannot fall and in such a manner that other packages cannot fall onto or slide against them. This does not preclude the use of loading methods that are designed to permit movement of the load and that are acceptable to the Bureau of Explosives. Packages bearing marking "This Side Up" or "This End Up" must be so loaded. Dangerous articles for which red, yellow, green, or white (acid, alkaline caustic liquid, or corrosive liquid) labels are prescribed herein must not be loaded in the same car with explosives named in §§ 73.53 to 73.87 of this chapter. (See loading and storage chart § 74.538.) Packages protected by yellow labels must not be loaded in the same end of a car with packages protected by "Acid", "Alkaline Caustic Liquid", or "Corrosive Liquid" labels, except that shippers loading carload shipments, who have obtained prior approval from the Bureau of Explosives, may load such articles together when it is known that the mixture of contents would not cause a dangerous evolution of heat or gas.

(d) Metal barrels or drums containing flammable liquids may be loaded on steel gondola or flat cars or into stock cars, but must not be loaded into hopper bottom cars.

(e) Empty cylinders, barrels, kegs, or drums, previously used for the shipment of any dangerous article, as defined in Part 73 of this chapter, must have all openings including removable heads, filling and vent holes properly closed before being offered for transportation. Small quantities of the material with which containers were loaded may remain in "empty" containers and when the vapors remaining therein are unstable, it is permissible to add sufficient inert gas to render the vapors stable.

(1) They may be loaded in open or stock cars when desired. Cars should not be placarded but lighted open-flame lanterns or other open-flame lights should be kept away.

(f) Carboys previously used for the shipment of corrosive liquids when presented to carriers for transportation in carload or less-than-carload shipments as "empty" carboys, must be thoroughly (completely) drained. Whenever practicable they should not be loaded with valuable or perishable freight.

(g) Matches: Carload lots of strike-anywhere (friction) matches must be loaded as compactly as possible to avoid motion within the car, especially lengthwise of the car. Protruding nails, metal band anchors or other projections on sidewalls, ends, door posts, studding, or car floors liable to puncture packages must be removed or adequately covered to prevent damage to containers of matches. Car doorways should be boarded on the inside to keep packages from contact with the doors, and the inside lining of the car should be supplemented when necessary by strips nailed to the car and close enough together to keep the boxes from being jammed against the studding and broken by high pressures on small areas. The strongest dimension of the box should be loaded lengthwise of the car. Partial layers of boxes should be interlocked with the lower layers. The cars used should be made secure against the entrance of sparks or rain and should be the strongest cars available.

(1) [Reserved].

(2) Carload lots of strike-anywhere matches handled subject to stop off privileges must be loaded in accordance with paragraph (g) of this section and when necessary the load must be rearranged and/or blocked and braced by each consignee before forwarding.

(3) Less-than-carload lots of "strike-anywhere" matches should be carefully loaded so that they cannot fall and so that other packages of freight cannot fall on or injure them. Whenever practicable the packages of matches should be placed to facilitate ready removal in case of fire. A smoking box of matches should not be broken open; the fire will cease of itself if air can be kept from it.

(4) Carload or less-than-carload lots of "strike-anywhere" matches which have been damaged by fire, or by water in extinguishing a fire, in transit or on carrier's property, must be reloaded in properly prepared cars, and braced or blocked before being forwarded to destination, to freight claim department or claim adjusters, or to original shipper or other parties for salvage. Great care should be taken to examine and repair damaged outside packages before reloading into car. All loose matches should first be destroyed. Individual interior boxes and paper-wrapped cartons or packages, should then be carefully placed in tight outside packages complying, as nearly as circumstances will permit, with container specifications; but under no condition shall the outside package be of less strength than required by specification 15A or 12C (§§ 78.168 or 78.206 of this chapter), nor of greater capacity than authorized. Charred cases must not be used. Boards used in repairing wooden cases must be so nailed that they will not allow any interior boxes, cartons, or packages to fall out. In the event that the individual boxes or paper-wrapped packages do not fit snugly in the outside package, the vacant spaces should be filled tightly with dry and clean cotton waste, or elastic wads of dry newspapers or dry waste paper.

(h) Corrosive liquids: Carboys of acids or other corrosive liquids must not be loaded into container cars. They must be so blocked, braced or stayed that they cannot change position during transit when being handled with reasonable care. Carboys of nitric acid must not be loaded into box cars or in truck bodies or trailers on flat cars more than two tiers high, except that completely boxed carboys, specification 1D (§ 78.4 of this chapter), may be loaded three tiers high. Car doors may be cleated in an open position if desired. Flat or stock cars may be used for loading carboys of acids.

(1) When less-than-carload shipments are loaded with other freight, the carboys must be placed near the doorway and must have wooden strips not less than 2 inches in height nailed to the car floor about 8 inches from the bracing. These strips must be arranged so that the liquid from a broken carboy will drain toward the doorway and outside the car. The space between the strips and the floor braces or blocking used for staying the carboy boxes must be covered with at least 1 inch thickness of clean and dry sand or earth, not sawdust or other combustible material.

(2) Nitric acid, when loaded with other acids or other corrosive liquids in carboys, must be separated from the other carboys. A 2 by 6 inch plank, set on edge, should be nailed across the car floor at least 12 inches from the nitric acid carboys and the space between the plank and the carboys of nitric acid should be filled with sand, sifted ashes, or other incombustible absorbent material.

(3) Electric storage batteries (wet) for shipment must be completely protected so that short circuits will be prevented and must not be loaded or stored with explosives.

(4) Shipments of electric storage batteries (wet), and electrolyte packed as required by § 73.258 of this chapter, must be so blocked and braced that they cannot change position during transit when cars are handled with reasonable care; and must be so loaded that other freight cannot fall onto or slide against them. They may be loaded on gondola or flat cars, but must not be loaded into hopper bottom cars.

(i) Compressed gases in cylinders: Cylinders containing compressed gases shall be securely lashed in an upright position so as to prevent their overturning; or loaded into racks securely attached to the car; or packed in boxes or crates of such dimensions as to prevent their overturning; or loaded in a horizontal position. Spec. ICC–4L cylinders must be loaded in an upright position and be securely braced.

(1) Cylinders containing compressed gases may be loaded into steel gondola or flat cars or into stock cars, but must not be loaded into hopper bottom cars.

(j) Radioactive materials and radioactive ores, residues, and similar materials.

(1) Shipments of radioactive ores, residues or similar material as provided in § 73.392 of this chapter must be so loaded as to avoid spillage and scattering of loose material.

(i) The amount of radioactive ores, residues, and similar materials loaded in a car must be limited as provided in § 73.392 of this chapter.

(2) The amount of radioactive materials, other than radioactive ores, residues, or similar materials, loaded in a freight car, shall be limited so that the quantity does not exceed 40 units as determined by totaling the number of units shown on the individual labels on the packages. (The requirements of this paragraph do not apply to bundles, boxes, barrels, or crates of magnesium-thorium alloys or uranium, depleted or normal, described by § 73.392 (e) and (f) of this chapter.)

NOTE 1: For purposes of these regulations, 1 unit equals 1 milliroentgen per hour at 1 meter for hard gamma radiation or the amount of radiation which has the same effect on film as 1 mrhm of hard gamma rays of radium filtered by ½ inch of lead.

(i) Containers of radioactive material weighing 5,000 pounds or more or strong wooden boxes with inside containers of solid radioactive material, securely braced and cushioned, and concrete-filled metal drums or concrete vaults weighing 700 pounds or more may be loaded in gondola cars (drop bottom cars not authorized); containers of radioactive material weighing 15,000 pounds or more may be loaded on flat cars. Containers must be so blocked and braced that they cannot change position during transit.

(3) No persons shall remain in a car containing radioactive material unnecessarily and the shipper must furnish the carrier with such information and equipment as is necessary for the protection of the carrier's employees.

(4) Any loose radioactive material must be removed from the car and placed in a closed container in a segregated location and held for instructions from the shipper or the Bureau of Explosives.

(k) Nitrates, except ammonium nitrate having organic coating, listed in § 73.182(b) of this chapter must be loaded in clean closed cars, which shall be free of loose boards, cracks, holes, or exposed decayed spots. Interior of cars must be swept clean and be free of any projections capable of injuring bags when so packaged. Doors of cars must have tight closures. Ammonium nitrate or ammonium nitrate fertilizer, having no organic coating, ammonium nitrate mixed fertilizer, or ammonium nitrate-phosphate, in bulk may be loaded in clean covered hopper cars. Ammonium nitrate having organic coating must be loaded in all-wood box cars, or wooden box cars with steel roofs, or steel box cars with wooden floors and must not be loaded in all-metal cars. Journals and boxes must be in good condition. (See § 74.541(a) (1) and (2).)

(l) Poison gas; class A, by rail freight: Poison gases, class A, may be shipped by, for, or to, the Departments of the Army, Navy, or Air Force of the United States Government, when loaded and handled as follows:

(1) In metal drums, specification ICC 5A (§ 78.81 of this chapter) or WD 5A,[1] in box cars, gondola cars, or stock cars (flat bottom) in carload lots.

(2) In tanks, specification ICC 106A (§§ 78.275 or 78.276 of this chapter), mounted on or secured to multi-unit cars or gondola cars (flat bottom) in carload lots only.

(3) In bombs, in box cars or gondola cars (flat bottom) in carload lots only.

(4) In projectiles or ammunition for cannon with gas filled projectiles in box cars in carload or less-than-carload lots.

(5) Gas handlers. Each shipment of one or more carloads, as described in subparagraphs (1), (2), (3), and (4) of this paragraph, shall be accompanied by a crew of qualified gas handlers, supplied with equipment to handle leaks or other container failure, which will permit the escape of gas. Gas handlers will remain with the shipment during the entire time that it is in the custody of the carrier. Gas handlers will, in the event of leakage or escape of gas, make repairs and perform decontamination, if necessary. If they need assistance they will advise the carrier's representative as to the nearest Chemical Warfare Service Depot and aid required.

(6) Loading and bracing in cars. Drums must be loaded in cars having level floors. Cars equipped with metal corrugated ends or cars having bowed ends must be supplied with end wall bulkheads constructed in accordance with requirements for center gates. (See Sketch 1, Bureau of Explosives Pamphlet No. 6.)

(7) Drums must be loaded not more than one tier (layer) high and with filling holes up. They must be loaded as closely together as possible both crosswise and lengthwise and so blocked and braced as to maintain their relative positions during transit.

(8) Drums with filling holes in heads must be loaded on their bottoms. They may be loaded in rows, lengthwise of the car and any space between the sides of car and the nearest row of drums must be "filled in" with wooden boards or lumber nailed to sides of car sufficient in length and width to contact both hoops of drums, or, drums may be loaded across car in staggered stacks of which the number of drums in alternate stacks is reduced by one drum. All drums in stacks following the first stack loaded in end of car must be placed tightly into the angle of space formed by the sidewalls of the drum in the preceding stack. Any space between the sides of car and the drums in stacks having the greater number of drums, must be "filled in" with wooden boards or lumber nailed to sides of car sufficient in length and width to contact both hoops of drums.

(9) Drums with filling holes in sides must be loaded on their sides with filling holes up. They must be loaded lengthwise of the car in rows and any space between sides of car and the nearest row of drums must be "filled in" with wooden boards or lumber nailed to sides of car sufficient in length and width to contact both hoops of drums.

(10) Drums must be loaded in box car from ends of car toward space between car doors, and there braced by center gates and wedges. (See Sketch 1, Bureau of Explosives Pamphlet No. 6.)

(11) Doorways of box cars must be protected by one of the methods prescribed in Sketch 1, Bureau of Explosives Pamphlet No. 6A.

(12) Tanks must be securely mounted on cars especially provided for them or on gondola cars prepared with substantial wooden frames and blocks.

(13) Bombs, projectiles, and cannon ammunition must be loaded, blocked and braced as shown in Bureau of Explosives Pamphlet 6A. When shipments are loaded in gondola cars they must be securely blocked and braced and not loaded higher than the sides of the car.

### § 74.533 Truck bodies or trailers on flat cars.

(a) Truck bodies or trailers containing explosives, class B, explosives, class C, or other dangerous articles as provided in Parts 71–78 of this chapter must be of such design and so loaded that they will not rupture or become seriously damaged under conditions normally incident to transportation and must be so secured on the flat car that they cannot permanently change position during transit. Packages of explosives and dangerous articles contained therein must be loaded and braced as provided by §§ 74.529, 74.530, and 74.532. Placards must be applied when prescribed by §§ 74.541 and 74.542.

(b) Truck bodies or trailers equipped with automatic heating or refrigerating equipment employing any fuel or article classed as a dangerous article in Parts

[1] War Department specification container.

71–78 of this chapter may be loaded and transported on flat cars if such equipment is of a type approved by the Bureau of Explosives. They must be so braced and stayed on the flat car that they cannot permanently change position during transit.

(c) A truck body or trailer on which is mounted any cargo tank containing any dangerous article shall not be accepted for transportation or transported except under conditions approved by the Bureau of Explosives.

**§ 74.534 Portable containers or tanks.**

(a) Portable containers or tanks must be of such design and so loaded and stayed in closed cars, in gondola cars, on flat cars, or in truck bodies or trailers on flat cars so they cannot permanently change position, rupture, or become seriously damaged under conditions normally incident to transportation. Ends, sidewalls, or doors of truck bodies or trailers shall not be relied upon to prevent shifting of portable containers or tanks.

## Subpart B—Loading and Storage Chart of Explosives and Other Dangerous Articles

**§ 74.538 Loading and storage chart of explosives and other dangerous articles.**

(a) Explosives or other dangerous articles must not be loaded, transported, or stored together, except as provided in the Loading and Storage Chart of Explosives and Other Dangerous Articles shown in this section.

The following table shows the explosives and other dangerous articles which must not be loaded or stored together.

The letter X at an intersection of horizontal and vertical columns shows that these articles must not be loaded or stored together, for example: Detonating fuzes class A, with or without radioactive components g horizontal column must not be loaded or stored with high explosives or propellant explosives, class A b vertical column.

| | | Low explosives or black powder | High explosives or propellant explosives, class A | Initiating or priming explosives, wet: Diazodinitrophenol, fulminate of mercury, guanyl nitrosamino guanylidene hydrazine, lead azide, lead styphnate, nitro mannite, nitrosoguanidine, pentaerythrite tetranitrate, tetrazene, lead mononitroresorcinate | Blasting caps, with or without safety fuse (including electric blasting caps), detonating primers | Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shell, ammunition for small arms with explosive bullets, or ammunition for small arms with explosive projectiles, or rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles; and boosters (explosive), bursters (explosive), or supplementary charges (explosive) without detonators [d] | Explosive projectiles, bombs, torpedoes, or mines, rifle or hand grenades (explosive), jet thrust units (jato), explosive, class A or igniters, jet thrust (jato), explosive, class A [e] | Detonating fuzes, class A, with or without radioactive components | Ammunition for cannon with empty, inert-loaded or solid projectiles, or without projectiles, or rocket ammunition with empty projectiles, inert-loaded or solid projectiles or without projectiles | Propellant explosives, class B, jet thrust units (jato), class B; igniters, jet thrust (jato), class B, or starter cartridge, jet engines, class B | Fireworks, special or railway torpedoes | Small arms ammunition | Primers for cannon or small arms, empty cartridge bags—black powder igniters, empty cartridge cases, primed, empty grenades, primed, combination primers or percussion caps, toy caps, explosive cable cutters, explosive rivets | Percussion fuzes, tracer fuzes or tracers | Time, combination or detonating fuzes, class C | Cordeau detonant fuse, safety squibs, fuse lighters, fuse igniters, delay electric igniters, electric squibs, instantaneous fuse or igniter cord | Fireworks, common, highway fuses or railway fuses | Flammable liquids or compressed flammable gases, red label | Flammable solids or oxidizing materials, yellow label | Acids or corrosive liquids, white label | Compressed nonflammable gases, green label | Poisonous gases or liquids, in cylinders, projectiles or bombs, poison gas label | Radioactive materials (class D poisons) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | a | b | c | d | e | f | g | i | 2 | h | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| CLASS A EXPLOSIVES | | | | | | | | | | | | | | | | | | | | | | | |
| Low explosives or black powder | (a) | | | X | | | | | | | X | | | | | | X | X | X | X | X | X | X |
| High explosives or propellant explosives, class A | (b) | | | X | X | | | X | | | X | | | | | | X | X | •X | X | X | X | X |
| Initiating or priming explosives, wet: Diazodinitrophenol, fulminate of mercury, guanyl nitrosamino guanylidene hydrazine, lead azide, lead styphnate, nitro mannite, nitrosoguanidine pentaerythrite tetranitrate, tetrazene, lead mononitroresorcinate | (c) | X | X | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Blasting caps, with or without safety fuse (including electric blasting caps), detonating primers | (d) | | X | X | | X | X | | | | •X | | | | | | •X | •X | ••X | •X | •X | X | X |
| Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shell, ammunition for small arms with explosive bullets, or ammunition for small arms with explosive projectiles, or rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles; and boosters (explosive), bursters (explosive), or supplementary charges (explosive) without detonators [d] | (e) | | | X | X | | | X | | | X | | | | | | X | X | X | X | X | X | X |
| Explosive projectiles, bombs, torpedoes, or mines, rifle or hand grenades (explosive), jet thrust units (jato), explosive, class A, or igniters, jet thrust (jato), explosive, class A [e] | (f) | | | X | X | | | X | | | X | | | | | | X | X | X | X | X | X | X |
| Detonating fuzes, class A, with or without radioactive components | (g) | | X | X | | X | X | | | | X | | | | | | X | X | X | X | X | X | X |
| CLASS B EXPLOSIVES | | | | | | | | | | | | | | | | | | | | | | | |
| Ammunition for cannon with empty, inert-loaded or solid projectiles, or without projectiles, or rocket ammunition with empty projectiles, inert-loaded or solid projectiles or without projectiles | 1 | | | X | | | | | | | | | | | | | | | | •X | | X | |

See footnotes at end of table.

The following table shows the explosives and other dangerous articles which must not be loaded or stored together.

The letter X at an intersection of horizontal and vertical columns shows that these articles must not be loaded or stored together, for example: Detonating fuzes class A, with or without radioactive components g horizontal column must not be loaded or stored with high explosives or propellant explosives, class A b vertical column.

| | | Low explosives or black powder | High explosives or propellant explosives, class A | Initiating or priming explosives, wet: Diazodinitrophenol, fulminate of mercury, guanyl nitrosamino guanylidene hydrazine, lead azide, lead styphnate, nitro mannite, nitrosoguanidine, pentaerythrite tetranitrate, tetrazene, lead mononitroresorcinate | Blasting caps, with or without safety fuse (including electric blasting caps), detonating primers | Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shell, ammunition (or small arms with explosive bullets, or ammunition for small arms with explosive projectiles, or rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles; and boosters (explosive), bursters (explosive), or supplementary charges (explosive) without detonators [4] | Explosive projectiles, bombs, torpedoes, or mines, rifle or hand grenades (explosive), jet thrust units (jato), explosive, class A [3] or igniters, jet thrust (jato), explosive, class A [3] | Detonating fuzes, class A, with or without radioactive components | Ammunition for cannon with empty, inert-loaded or solid projectiles, or without projectiles, or rocket ammunition with empty projectiles, inert-loaded or solid projectiles or without projectiles | Propellant explosives, class B, jet thrust units (jato), class B, igniters, jet thrust (jato), class B, or starter cartridges, jet engines, class B | Fireworks, special or railway torpedoes | Small arms ammunition | Primers for cannon or small arms, empty cartridge bags—black powder igniters, empty cartridge cases, primed, empty grenades, primed, combination primers or percussion caps, toy caps, explosive cable cutters, explosive rivets | Percussion fuzes, tracer fuzes or tracers | Time, combination or detonating fuzes, class C | Cordeau detonant fuse, safety squibs, fuse lighters, fuse igniters, delay electric igniters, electric squibs, instantaneous fuse or igniter cord | Fireworks, common, highway fuses or railway fuses | Flammable liquids or compressed flammable gases, red label | Flammable solids or oxidizing materials, yellow label | Acids or corrosive liquids, white label | Compressed nonflammable gases, green label | Poisonous gases or liquids, in cylinders, projectiles or bombs, poison gas label | Radioactive materials (class D poisons) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | a | b | c | d | e | f | g | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| CLASS B EXPLOSIVES—continued | | | | | | | | | | | | | | | | | | | | | | | |
| Propellant explosives, class B, jet thrust units (jato) class B, igniters, jet thrust (jato), class B, or starter cartridges, jet engine, class B | 2 | | | X | | | | | | | | | | | | | | | | [6] X | | X | |
| Fireworks, special or railway torpedoes | 3 | X | X | X | [5] X | X | X | X | | | | | | | | | | | | | | X | |
| CLASS C EXPLOSIVES | | | | | | | | | | | | | | | | | | | | | | | |
| Small arms ammunition | 4 | | | X | | | | | | | | | | | | | | | | | | | |
| Primers for cannon or small arms, empty cartridge bags—black powder igniters, empty cartridge cases, primed, empty grenades, primed, combination primers or percussion caps, toy caps, explosive cable cutters, explosive rivets | 5 | | | X | | | | | | | | | | | | | | | | | | | |
| Percussion fuzes, tracer fuzes or tracers | 6 | | | X | | | | | | | | | | | | | | | | | | | |
| Time, combination or detonating fuzes, class C | 7 | | | X | | | | | | | | | | | | | | | | | | | |
| Cordeau detonant fuse, safety squibs, fuse lighters, fuse igniters, delay electric igniters, electric squibs, instantaneous fuse or igniter cord | 8 | | | X | | | | | | | | | | | | | | | | | | | |
| Fireworks, common, highway fuses or railway fuses | 9 | X | X | X | [5] X | X | X | X | | | | | | | | | | | | | | X | |
| OTHER DANGEROUS ARTICLES | | | | | | | | | | | | | | | | | | | | | | | |
| Flammable liquids or compressed flammable gases, red label | 10 | X | X | X | [5] X | X | X | X | | | | | | | | | | | | | | X | |
| Flammable solids or oxidizing materials, yellow label | 11 | X | [5] X | X | [5] X | X | X | X | | | | | | | | | | | | [6] X | | X | |
| Acids or corrosive liquids, white label | 12 | X | X | X | [5] X | X | X | X | [6] X | [6] X | | | | | | | | | [6] X | | | X | |
| Compressed nonflammable gases, green label | 13 | X | X | X | [5] X | X | X | X | | | | | | | | | | | | | | | |
| Poisonous gases or liquids, in cylinders, projectiles or bombs, poison gas label | 14 | X | X | X | X | X | X | X | X | X | X | | | | | | X | X | X | X | | | |
| Radioactive materials (class D poisons) | 15 | X | X | X | X | X | X | X | | | | | | | | | | | | | | | |

[5] Blasting caps or electric blasting caps in quantities not exceeding 1,000 caps may also be loaded and transported with articles named in vertical and horizontal columns 3, 9, 10, 11, 12, and 13. Loading and transportation of blasting caps or electric blasting caps in any quantity with articles named in vertical or horizontal columns b, c, e, or f is prohibited.

[6] Unless loaded in opposite ends of car, acids or other corrosive liquids, white label, must not be loaded with yellow label articles, ammunition for cannon with or without projectiles, or propellant explosives, except that shippers loading carload shipments of white label and yellow label articles (and who have obtained prior approval from the Bureau of Explosives) may load such articles together when it is known that the mixture of contents will not cause a dangerous evolution of heat or gas.

[3] Explosives, class A, and explosives, class B, other than ammunition, must not be loaded or stored with chemical ammunition containing incendiary charges or white phosphorus either with or without bursting charges. Chemical ammunition containing incendiary charges or white phosphorus may be loaded and stored with other ammunition of the same classification.

[4] Bursters (explosive), boosters (explosive), or supplementary charges (explosive) without detonators when shipped by, to or for the Departments of the Army, Navy, and Air Force of the United States Government may be loaded with any of the articles named except those in columns c, d, 3, 9, 10, 11, 12, 13, 14, and 15.

[7] Does not include nitro carbo nitrate or ammonium nitrate, fertilizer grade, which may be loaded, transported or stored with high explosives or with blasting caps or electric blasting caps, and detonating primers.

NOTE 1: Charged electric storage batteries must not be loaded in the same car nor stored with any class A explosive.

NOTE 2: Cyanides or cyanide mixtures must not be loaded or stored with acids of corrosive liquids.

NOTE 3: Gas identification sets may be loaded and transported with all articles named except those in column c.

NOTE 4: Nitric acid, when loaded in the same car with other acids or other corrosive liquids in carboys, must be separated from the other carboys. A 2 by 6 inch plank, set on edge, should be nailed across the car floor at least 12 inches from the nitric acid carboys, and the space between the plank and the carboys of nitric acid should be filled with sand sifted ashes or other incombustible absorbent material.

NOTE 5: Smokeless powder for small arms in quantities not exceeding 100 pounds net weight in one car shall be classed as a flammable solid for purposes of transportation when approved for such classification by the Bureau of Explosives.

## Subpart C—Placards on Cars

**§ 74.540 "Explosives" placards.**

(a) Explosives placards as prescribed in § 74.550 must be applied to certified cars containing explosives, class A, specified in §§ 73.53 to 73.87 of this chapter. Placards must show in the spaces provided station name and date.

NOTE 1: For cars requiring the poison gas placard, see § 74.542.

**§ 74.541 "Dangerous" placards; "Dangerous—Radioactive material" placards; or "Caution—Residual phosphorus" placards.**

(a) "Dangerous" placard, as prescribed by § 74.552 must be applied to cars, and container cars, as follows:

(1) Cars containing one or more packages bearing red, yellow, white acid, or corrosive liquid caution labels, or white "poison" labels, as prescribed by §§ 73.405 to 73.408 and 73.409 (a) (2) of this chapter, or without labels as authorized in § 73.402 (c) of this chapter.

(2) Cars containing flammable solids, oxidizing materials or poisonous solids, class B, in bulk.

(3) Tank cars containing flammable liquids, flammable solids or oxidizing materials, acids or corrosive liquids, poisonous liquids or solids, class B, compressed flammable gases, compressed nonflammable gases.

(4) Cars containing shipments of explosives, class B.

NOTE 1: For cars also requiring the poison gas placard, see § 74.542.

(5) When explosives, class A, are loaded in the same car with explosives, class B, or poisonous solids or liquids, class B, only the "Explosives" placard is required.

(b) "Dangerous—Radioactive material" placards, as prescribed in § 74.553, must be applied to cars containing shipments of class D poisons as prescribed by §§ 73.392(c) and 73.393 of this chapter and bearing labels as described in § 73.414 (a), (b), and (c) of this chapter.

(c) "Caution—Residual phosphorus" placard, as prescribed in § 74.555, must be applied to tank cars which last contained shipments of white or yellow phosphorus and which are required to be filled with water or inert gas before tank car is offered for return movement as provided in § 73.190(b)(3) of this chapter.

**§ 74.542 "Poison gas" placards.**

(a) "Poison gas" placards as prescribed by § 74.551 must be applied to cars as follows:

(1) Cars containing one or more packages or articles bearing the "Poison gas" label.

(2) Cars containing ammunition for cannon with toxic gas projectiles, or projectiles, bombs, or other containers loaded with toxic gas requiring the "Poison gas" label.

NOTE 1: The poison gas placard must be applied to cars in addition to any other placards required.

(b) *"Flammable poison gas" placards.* "Flammable poison gas" placards as prescribed in § 74.556 must be applied to Class 105A–W tank cars containing hydrocyanic acid.

(c) *"Poison gas" placards.* "Poison gas" placards, for tank cars, as prescribed in § 74.557 must be applied to tank cars containing class A poisons except hydrocyanic acid.

**§ 74.543 Placarding cars; passenger trains.**

(a) When a freight, baggage, or express car containing freight shipments of explosives, class B, or freight shipments of dangerous articles other than explosives requiring labels as prescribed by Part 73 of this chapter (not including class A poison gases or liquids), is hauled in a passenger train and such car or cars are not occupied by an employe of the carrier, proper placards must be applied to the car as required by this part.

**§ 74.544 Placards not required.**

(a) Placards are not required for:

(1) Cars containing explosives, class C.

(2) Cars, other than tank cars, containing nonflammable compressed gas (green label).

(3) Cars containing class C poisons (tear gas label).

(4) Cars loaded with electric storage batteries containing electrolyte or corrosive battery fluid in carload lots.

(5) Cars carrying shipments of electrolyte acid or corrosive battery fluid together with self-propelled vehicles or mobile agricultural machinery in accordance with the provisions of § 73.257 (c).

(6) Cars containing radioactive material bearing label described in § 73.414 (d) of this chapter.

**§ 74.545 Commodity name on carloads.**

(a) Placards for carloads of class B explosives and other dangerous articles must show thereon, in the space provided, the proper name of the commodity as prescribed by § 72.5 of this chapter, or the commodity name must be shown on tag board cards measuring approximately 5 by 8 inches securely attached to each side of the car.

**§ 74.546 Placards must be standard.**

(a) Placards must conform to standards as prescribed. Samples will be furnished by the Bureau of Explosives on request.

(b) Tagboard placards must be printed on strong tagboard of quality and strength not less than that designated commercially as 100 percent sulphate, weighing 125 pounds per ream, of sheets 24 x 36 inches, and having a resistance of not less than 60 pounds per square inch Mullen test.

(c) Paper placards must be printed on strong white paper.

(d) Placards or car cards which by their shape, coloring, or printing may be readily confused with the standard placards prescribed in this part must not be used.

(e) Carrier's or shipper's name and stationery form number may be printed on placards in type not larger than 10 point, but must be printed thereon separate from any placard wording.

(f) When the tag board placards bear wording prescribed in § 74.552 (a) and provided the wording prescribed by § 74.563 (c) appears on the reverse side thereof, the words "removed or" may be omitted or the word "removed" changed to "reversed", as the case may be.

(g) Placards remaining on hand and in compliance with § 74.552(a) or § 74.553(a) in effect on June 19, 1960, may be used until present stocks are exhausted.

**§ 74.547 Carriers supply of placards.**

(a) Carriers must keep on hand an adequate supply of all necessary placards for placarding cars loaded by them and for the replacement of missing placards on loaded cars while in transit.

**§ 74.548 Placarded cars.**

(a) Shippers must have applied placards to cars loaded by them when cars are acceptable for transportation. (See § 74.549 for method of application.)

**§ 74.549 Application of placards.**

(a) Placards must be securely applied one to each end and each side of car, as follows:

(1) By tacking tag-board placards to each end and each side of cars, or to placard boards of suitable size provided for the purpose.

(2) Placards applied to the sides of closed or open top cars containing explosives or other dangerous articles must be attached to the fixed placard board or to the side of the wooden car between car initials and number and the car door.

(3) Tacks when used must have heads at least ¼ inch across. At least 5 tacks must be used, one at each corner and one in the center of the placard, or when stapling devices are used the staples should be made of flat metal of not less than 19 gauge, and the space between the legs of the staples should be at least ⅜ inch and length of staples not less than ¼ inch. At least 9 staples must be used, one at each corner, one along edge between each corner, and one in center. Tacks, nails, staples, or other devices used in previous application of placards must be removed when their presence interferes with proper application of placards.

(4) By insertion of tag-board placards in suitable placard holders affixed to cars.

(5) Paper placards must be securely pasted to metal or other smooth surfaces. Metal placard boards must be used when provided for the purpose. Grease or other substances which interfere with secure application must be removed from surfaces before pasting on placards.

(6) By application of adhesive tape, which shall be not more than 1¼ inches wide and which shall be applied around the entire perimeter of the placard so that approximately one-half the width of the tape adheres to the placard and one-half to the surface to which the placard is attached. Tape must be properly applied, weather-resistant, and capable of holding the placard securely in position under conditions normal to transportation. This method is authorized only when attachment of placards to

metal surfaces is necessary and the metal surface is sufficiently smooth and of sufficient size to permit attachment of the placards in their proper position.

(b) Placards applied to cars must have the printing in horizontal position.

(c) "Explosives" placards and car certificates must be placed alongside of each other.

NOTE 1: Because of the present emergency and until further order of the Commission, gondola cars used for the shipments of bombs or poison gas, may be placarded on both sides and both ends of car.

(d) Placards applied to sides of tank cars must be placed as near the middle as possible. Side placard boards applied to tank cars near end of tank may be used until replaced by boards located near middle of tank, in accordance with requirements effective November 1, 1927.

(e) Placard holders must be so constructed as not to obstruct the wording, change the shape of the placard, or reduce the exposed surface of the placard more than three-eighths of an inch on each side.

NOTE 1: Permanent metal holders designed to provide for secure attachment, easy application, removal, or reversal of placards prescribed in these regulations are required on all new tank cars, on new underframes to which tanks are applied, and on all tank cars receiving general repairs.

(f) Placards as required by §§ 74.540, 74.541, and 74.542 must be securely applied to both sides and both ends of a container car on which a container or containers loaded with explosives, class A or B, or with dangerous articles requiring labels, are placed; or placards must be securely applied to both ends of such a car and to both sides of a container loaded with such articles. Car certificates required by § 74.525 must be securely applied to both sides of a container car on which a container or containers loaded with class A explosives are placed.

(g) Metal reversible placards, bearing on one side the "Dangerous" placard wording as prescribed in § 74.552 and on the reverse side the "Dangerous—Empty" placard wording as prescribed in § 74.563 may be used in lieu of placard holders prescribed in Note 1 to § 74.549 (e). The wording on these placards must be kept distinct as to colors and clearly legible.

(h) Placards as required by §§ 74.540, 74.541, and 74.542 must be securely applied to both sides and both ends of car, or to both sides and both ends of truck body or trailer loaded on flat cars, containing explosives or other dangerous articles. Car certificates as required by § 74.525 must be securely applied to both sides of such cars. When more than one trailer is loaded on a flat car, placards must be applied so as to be plainly visible from both ends of the car.

### § 74.550 Explosives, class A placard.

(a) The "Explosives" placard must be of rectangular shape, measuring 11 by 14 inches, and must bear the wording as shown in the following cut; the printing must be in red and black as follows:

EXPLOSIVES PLACARD

(Reduced size)

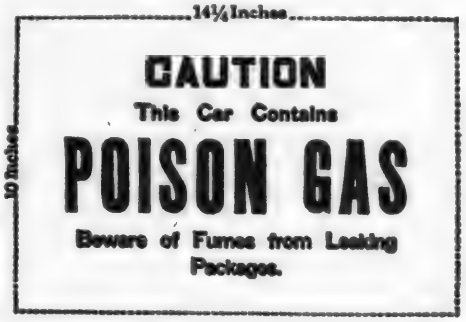
14 inches
11 inches
EXPLOSIVES
HANDLE CAREFULLY
KEEP FIRE AWAY
CONDENSED RULES FOR HANDLING THIS CAR
1. In switching this car in yards or on sidings have a non-placarded car between this car and engine.
2. This car must not be cut off while in motion.
3. Avoid all shocks to this car. Other cars must not be allowed to strike this car. Couple carefully.
4. When the explosives are unloaded this placard must be removed from car.

### § 74.551 Poison gas placard.

(a) The "Poison gas" placard for other than tank cars must be of rectangular shape, measuring 10 x 14¼ inches, and must bear the wording as shown in the following cut; the printing must be in red as follows:

POISON GAS PLACARD

(Reduced size)




### § 74.552 Dangerous placard.

(a) The "Dangerous" placard must be of diamond shape, measuring 10¾ inches on each side, and must bear the wording as shown in the following cut; the word "Dangerous" must be in red, and the lettering in black, as follows:

DANGEROUS PLACARD

(Reduced size)

10¾ inches
10¾ inches
KEEP LIGHTS AND FIRES AWAY!
DANGEROUS
(To be printed in red)
Name of contents of carload shipments must be inserted here or on commodity card
HANDLE CAREFULLY

(b) The reverse side of such placards may bear the wording as prescribed for the "Dangerous-Empty" placard. (See § 74.563.)

### § 74.553 Dangerous-Radioactive material placard.

(a) The "Dangerous-Radioactive material" placard for class D poisons must be of diamond shape, measuring 10¾ inches on each side, and must bear the wording in red letters as shown in the following cut:

DANGEROUS PLACARD FOR RADIOACTIVE MATERIAL

(Reduced size)

10¾ inches
10¾ inches
DO NOT REMAIN IN, OR NEAR THIS CAR UNNECESSARILY
Notify Shipper or Bureau of Explosives before handling contents of broken packages
DANGEROUS
RADIOACTIVE MATERIAL
This car must not be next to a car placarded explosives or next to carloads of undeveloped film
Avoid contact with leaking contents
WHEN LADING IS REMOVED THIS PLACARD MUST BE REMOVED

### § 74.554 Unauthorized use of placards.

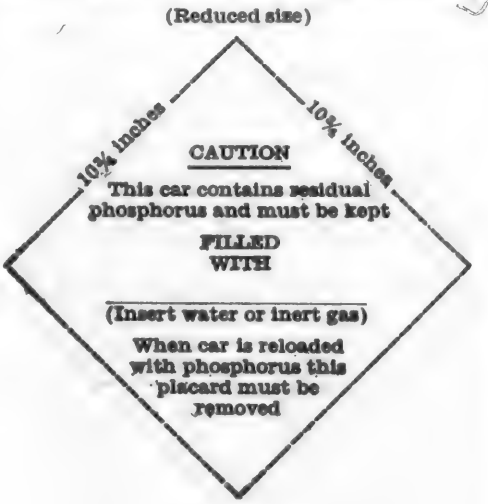
(a) Placards prescribed by this part must not be applied to cars containing articles not subject to Parts 71–78 of this chapter or specifically exempted therefrom.

### § 74.555 "Caution—Residual phosphorus" placard.

(a) Tank cars previously loaded with phosphorus, when shipped filled with water or inert gas, must bear a placard reading "Caution—This car contains residual phosphorus and must be kept filled with (water) or (inert gas)". The placard must be of diamond shape measuring 10¾ inches on each side, and must bear the wording in black letters as shown in the following cut:

CAUTION PLACARD FOR RESIDUAL PHOSPHORUS

(Reduced size)


10¾ inches
10¾ inches
CAUTION
This car contains residual phosphorus and must be kept
FILLED WITH
(Insert water or inert gas)
When car is reloaded with phosphorus this placard must be removed

**§ 74.556 Flammable poison gas placard.**

(a) The "Flammable poison gas" placard must be of rectangular shape, measuring 13 by 17 inches, and must bear the wording as shown in the following cut; the printing must be in red with the exception of name of contents which must be in black, as follows:

FLAMMABLE POISON GAS PLACARD

(Reduced size)

17 Inches
13 Inches
DO NOT REMAIN ON OR NEAR THIS CAR UNNECESSARILY
Lading must not be transferred en route under any conditions before shipper and Bureau of Explosives are notified.
FLAMMABLE
POISON GAS
NAME OF CONTENTS
This car must not be next to a car placarded "Explosives."
Beware of liquid and of gas leaking from tank or fittings.
WHEN LADING IS REMOVED THIS PLACARD MUST BE REVERSED

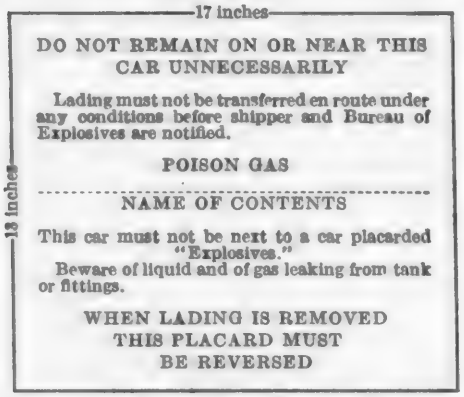
(b) The reverse side of such placards may bear the wording as prescribed for the "Flammable Poison Gas—Empty" placard. (See § 74.563.)

**§ 74.557 Poison gas placard.**

(a) The "Poison gas" placard, for tank cars, must be of rectangular shape, measuring 13 inches by 17 inches, and must bear the wording as shown in the following cut; the printing must be in red with the exception of name of contents which must be in black, as follows:

POISON GAS PLACARD

(Reduced size)


17 inches
13 inches
DO NOT REMAIN ON OR NEAR THIS CAR UNNECESSARILY
Lading must not be transferred en route under any conditions before shipper and Bureau of Explosives are notified.
POISON GAS
NAME OF CONTENTS
This car must not be next to a car placarded "Explosives."
Beware of liquid and of gas leaking from tank or fittings.
WHEN LADING IS REMOVED THIS PLACARD MUST BE REVERSED

(1) The reverse side of such placards may bear the wording as prescribed for the "Poison Gas—Empty" placard. (See § 74.563(f).)

## Subpart D—Unloading From Cars

**§ 74.560 Tank car delivery.**

(a) Tank cars containing flammable liquids or flammable poison gas having a flash point of 80° F. or below, except liquid road asphalt or tar, must not be delivered unless originally consigned or subsequently reconsigned to parties having private-siding (see Note 1 of this section) or to parties using railroad-siding facilities which have been equipped for piping the liquid from tank cars to permanent storage tanks of sufficient capacity to receive contents of car.

(b) No tank car containing compressed gas may be unloaded unless the car is consigned for delivery and unloading on a private track (see Note 1 to subparagraph (2) of this paragraph), except that where no private track is available, delivery and unloading on carrier tracks is permitted provided the following conditions are complied with:

(1) Any tank car of ICC–106A or 110A type (see § 78.275, § 78.276 or § 78.293 of this chapter) may be delivered and the loaded unit tanks may be removed from car frame on carrier tracks, if, before car is accepted for transportation, the shipper has obtained from the delivering carrier and filed with originating carrier, written permission (see Note 2 to subparagraph (2) of this paragraph) for such removal. The consignee must furnish adequately safe mechanical hoist, obtained from the carrier if desirable, by which the tanks are lifted from the car and deposited directly upon vehicles furnished by the consignee for immediate removal from carrier property or tanks must be lifted by adequately safe mechanical hoist from car directly to vessels for further transportation.

(2) Any tank car of other than ICC–106A or 110A type (see §§ 78.275, 78.276, or 78.293 of this chapter), containing anhydrous ammonia, liquefied hydrocarbon or liquefied petroleum gas, and having interior pipes of liquid and gas discharge valves equipped with check valves, may be delivered and unloaded on carrier tracks, if the lading is piped directly from the car to permanent storage tanks of sufficient capacity to receive the entire contents of the car. Such cars may also be stored on a private track or on a carrier track when designated by the carrier for such storage.

NOTE 1: For this purpose, a private track is a track outside of carrier's right-of-way, yard and terminals, and of which the carrier does not own either the rails, ties, roadbed or right-of-way; or a track or portion of a track which is devoted to the purpose of its user, either by lease or written agreement, in which case the lease or written agreement will be considered as equivalent to ownership.

NOTE 2: Carriers should give permission for the unloading of these containers on carrier tracks only where no private siding is available within reasonable trucking distance of final destination. The danger involved is the release of compressed gases due to accidental injury to container in handling. The exposure to this danger decreases directly with the isolation of the unloading point.

**§ 74.561 Tank car unloading.**

(a) In unloading tank cars the following rules must be observed (see also § 74.560 for compressed gases):

(1) Unloading operations should be performed only by reliable persons properly instructed and made responsible for careful compliance with this part.

(2) Brakes must be set and wheels blocked on all cars being unloaded.

(3) Caution signs must be so placed on the track or car as to give necessary warning to persons approaching car from open end or ends of siding and must be left up until after car is unloaded and disconnected from discharge connection. Signs must be of metal or other suitable material, at least 12 by 15 inches in size and bear the words, "STOP—Tank Car Connected", or "STOP—Men at Work", the word "STOP" being in letters at least 4 inches high and the other words in letters at least 2 inches high. The letters must be white on a blue background.

(4) Before manhole cover or outlet valve cap is removed, tank car must be relieved of all interior pressure by cooling tank with water or venting tank by raising safety valve or opening vent on dome at short intervals. If venting to relieve pressure will cause a dangerous amount of vapor to collect outside the car, venting and unloading must be deferred until pressure is reduced by allowing the car to stand overnight or otherwise cooling the contents. These precautions are not necessary when car is equipped with a manhole cover which hinges inward or with an inner manhole cover which does not have to be removed to unload the car, and when pressure is relieved by piping vapor into a condenser or storage tank.

(b) After pressure is released, seal should be broken and manhole cover removed as follows:

(1) *Screw type.* Cover must be loosened by placing bar between manhole cover lug and knob. After two complete turns, so that vent openings are exposed, the operation must be stopped, and if there is any sound of escaping vapor, the cover must be again screwed down tightly and interior pressure relieved as prescribed in paragraph (a) (4) of this section, before again attempting to remove the cover.

(2) *Hinged and bolted type.* All nuts must be unscrewed one complete turn, after which same precautions as prescribed for screw type cover must be observed.

(3) *Interior type.* All dirt and cinders must be carefully removed from around cover before yoke is unscrewed.

(c) When car is unloaded through bottom outlet valve, manhole cover must be adjusted as follows:

(1) *Screw type.* Manhole cover must be put in place, but not entirely screwed down, in order that air may enter tank through vent holes in threaded flange of cover.

(2) *Hinged and bolted type.* A small wooden block should be placed under one edge of cover.

(3) *Interior type.* Screw must be tightened up in yoke so that cover will be brought up within one-half inch of closed position.

(d) When unloading through bottom outlet of cars equipped with interior manhole type of covers, and in all cases where unloading is done through the manhole (unless special covers are used, provided with safety-vent opening and tight connection for discharge outlet), the manhole must be protected against entrance of sparks or other sources of ignition of vapor by asbestos or metal covers or by being covered and surrounded with wet burlap. Burlap must be kept damp by replacement or the application of water as needed.

(e) Seals or other substances must not be thrown into the tank. Also care must be taken to avoid spilling any of the contents over car or tank.

(f) Valve rod handle or control in dome must be operated a few times to see that outlet valve in bottom of tank is on its seat before valve cap is removed.

(g) Valve cap, or reducer when large outlet is to be used, must be removed with suitable wrench after set screws are loosened and a pail is placed in position to catch any liquid that may be in outlet chamber. If valve cap or reducer does not unscrew easily, it must be tapped lightly with mallet or wooden block in an upward direction. If leakage shows upon starting the removal, cap or reducer must not be entirely unscrewed, but sufficient threads must be left engaged and sufficient time allowed to permit escape of any accumulation of liquid in the outlet chamber. If leakage stops or initial rate of leakage diminishes materially, cap or reducer may be entirely removed. If initial rate of leakage continues, further efforts must be made to seat the outlet valve, see paragraph (f) of this section. If this fails, the cap or reducer must be screwed up tight and tank must be unloaded through the dome. If upon removal of the outlet cap the outlet chamber is found to be blocked with frozen liquid or any other matter, replace cap immediately and make careful examination to determine that outlet casting has not been cracked. If the obstruction is not frozen liquid, the car must be unloaded through the dome. If the obstruction is frozen liquid and no crack has been found in the outlet casting, the car may, if circumstances require it, be unloaded from the bottom as follows:

(1) Remove cap and attach unloading connections immediately. Then, before opening the valve inside the tank car, apply steam to outside of outlet casting or wrap casting with burlap or other rags and apply hot water to melt the frozen liquid. In any event, top unloading is considered safer than bottom unloading.

(h) Unloading connections must be securely attached to unloading pipes on dome or to bottom discharge outlets before discharge valves are opened.

(i) Tank cars must not be allowed to stand with unloading connections attached after unloading is completed, and throughout the entire period of unloading, or while car is connected to unloading device, the car must be attended by the unloader.

(j) If necessary to discontinue unloading a tank car for any reason, all unloading connections must be disconnected. All valves must first be tightly closed, and the closures of all other openings securely applied.

(k) As soon as a tank car is completely unloaded, all valves must be made tight, the unloading connections must be removed and all other closures made tight, except that heater coil inlet and outlet pipes must be left open for drainage. The manhole cover must be applied by the use of a bar or wrench, the outlet valves reducer and outlet valve cap by the use of a wrench having a handle at least 36 inches long, and the outlet valve cap plug, end plug, and all other closures of openings and of their protective housings by the use of a suitable tool.

(l) Railroad defect cards must not be removed.

(m) Ground around connections must be covered with fresh, dry sand or dirt, if oil or gasoline has been spilled previously.

(n) All tools and implements used in connection with unloading should be kept free from oil, dirt, and grit.

**§ 74.562 Removal of placards and car certificate after unloading.**

(a) When lading requiring placards or car certificates is removed from cars other than tank cars, placards and car certificates must be removed by the party unloading the car.

(b) After tank car is unloaded, the party unloading the car must remove all shipping cards and "Dangerous" placards from car, or may replace or cover the placards with the "Dangerous—Empty" placards prescribed in § 74.563, or reverse the reversible metal placards so as to exhibit the "Dangerous—Empty" wording, and must promptly notify the railroad agent that car is empty.

(c) Tank cars filled with water or an inert gas after unloading phosphorus must have the "Dangerous" placards replaced by the caution placard for residual phosphorus as prescribed in § 74.555.

(d) After flammable poison gas is unloaded from tank car, the party unloading the car must remove all shipping cards and "Flammable Poison Gas" placards from car. "Dangerous—Empty Flammable Poison Gas" placards detailed in § 74.563 must be applied to empty tank car.

(e) After poison gas is unloaded from tank car, the party unloading the car must remove all shipping cards and "Poison Gas" placards from car. "Dangerous—Empty Poison Gas" placards detailed in § 74.563(f) must be applied to empty tank car.

**§ 74.563 "Dangerous—Empty" placards.**

(a) "Dangerous—Empty" placards must measure 10¾ inches on each side (see paragraphs (d) and (f) of this section for "Flammable Poison Gas—Empty" and "Poison Gas—Empty" placards respectively). The printing must be as shown in the cuts in this section, in black on strong white paper, or on tag board designated commercially as 100 percent sulphate, weighing 125 pounds per ream, of sheets 24 inches by 36 inches, and having a resistance of not less than 60 pounds per square inch, Mullen test.

(b) The reverse side of such placards may bear the wording as prescribed for the "Dangerous" placard. (See § 74.552.)

(c) Paper placards must be securely pasted over the "Dangerous" placards pasted on metal placard boards provided for the purpose. Tag board placards must be securely tacked to wooden boards or inserted in holders provided for the purpose.

"DANGEROUS—EMPTY" PLACARD

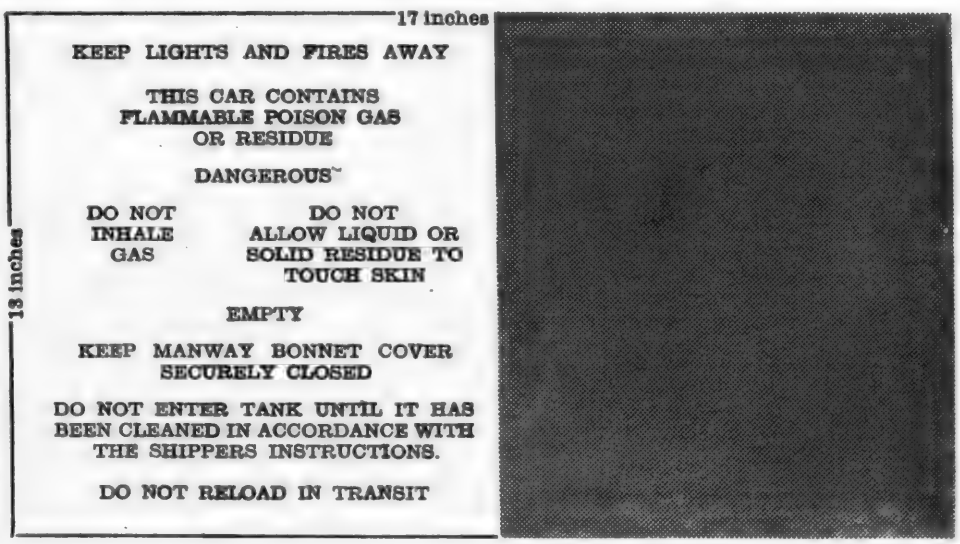
(Reduced size)

NOTE 1: The words *"Keep lights and fires away"* and *"Flammable or poisonous vapor"* may be omitted from placards attached to tank cars which previously contained alkaline corrosive liquids or corrosive liquids which do not react with the metal wall or lining of the tank to form a flammable or poisonous gas.

(d) "Flammable Poison Gas—Empty" placard must be of rectangular shape, measuring 13 inches by 17 inches and must bear the wording as shown in the following cut.

"FLAMMABLE POISON GAS—EMPTY" PLACARD

(Reduced Size)

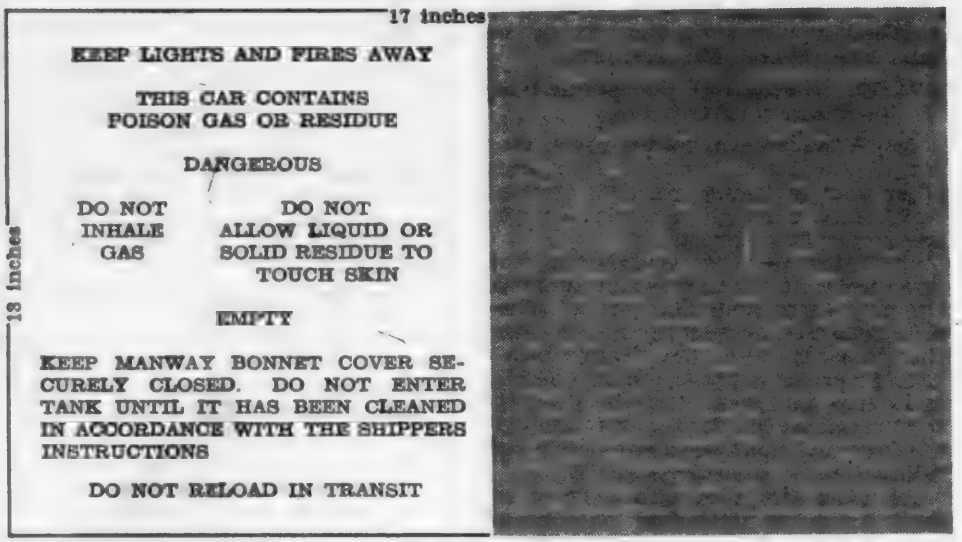

17 inches
13 inches
KEEP LIGHTS AND FIRES AWAY
THIS CAR CONTAINS
FLAMMABLE POISON GAS
OR RESIDUE
DANGEROUS
DO NOT INHALE GAS
DO NOT ALLOW LIQUID OR SOLID RESIDUE TO TOUCH SKIN
EMPTY
KEEP MANWAY BONNET COVER SECURELY CLOSED
DO NOT ENTER TANK UNTIL IT HAS BEEN CLEANED IN ACCORDANCE WITH THE SHIPPERS INSTRUCTIONS.
DO NOT RELOAD IN TRANSIT

(e) The reverse side of such placards may bear the wording as prescribed for the "Flammable Poison Gas" placard. (See § 74.556.)

(f) "Poison Gas—Empty" placard, for tank cars, must be of rectangular shape, measuring 13 inches by 17 inches and must bear the wording as shown in the following cut:

"POISON GAS—EMPTY" PLACARD

(Reduced size)


17 inches
13 inches
KEEP LIGHTS AND FIRES AWAY
THIS CAR CONTAINS
POISON GAS OR RESIDUE
DANGEROUS
DO NOT INHALE GAS
DO NOT ALLOW LIQUID OR SOLID RESIDUE TO TOUCH SKIN
EMPTY
KEEP MANWAY BONNET COVER SECURELY CLOSED. DO NOT ENTER TANK UNTIL IT HAS BEEN CLEANED IN ACCORDANCE WITH THE SHIPPERS INSTRUCTIONS
DO NOT RELOAD IN TRANSIT

(1) The reverse side of such placards may bear the wording as prescribed for the "Poison Gas" placard. (See § 74.557.)

### § 74.564 Removal and disposition of explosives and other dangerous articles at destination.

(a) *Delivery at nonagency stations.* Shipments of explosives must not be unloaded at nonagency stations unless the consignee is there to receive them or unless properly locked and secure storage facilities are provided at that point for their protection.

(1) If delivery cannot be so made, shipment must be taken to next or nearest agency station for delivery.

(b) *Delivery at agency stations.* Carrier must require consignee to remove shipments of explosives and other dangerous articles from carrier's property within 48 hours after notice of arrival has been sent or given. Saturdays, Sundays, and holidays are not included. If not so removed, carrier must immediately dispose of the shipments as follows:

(1) Class A explosives, by storage at the expense of the owner or by return to the shipper if reasonably safe storage is not available; by sale; when necessary to safety, by destruction under supervision of a competent person.

(2) Explosives and other dangerous articles, except class A explosives, in carload and less-than-carload lots as prescribed in subparagraphs (3) and (4) of this paragraph.

(3) Carload shipments: By storage on carrier's property; by storage on other than carrier's property, if safe storage on carrier's propety is not available; by sale at expiration of 15 calendar days after notice of arrival has been sent or given to consignee, provided consignor has been notified of nondelivery at expiration of 48-hour period and orders for disposition have not been received.

(4) Less-than-carload shipments: By return to shipper if notice of nondelivery was requested and given consignor as prescribed by carrier's tariff, and orders for return to shipper have been received; by storage on carrier's property; by storage on other than carrier's property, if safe storage on carrier's property is not available; by sale at expiration of 15 calendar days after notice of arrival has been sent or given to consignee, provided consignor has been notified of nondelivery at expiration of 48-hour period and orders for disposition have not been received.

### § 74.565 Violations and accidents to be reported.

(a) Consignees must report promptly to the Bureau of Explosives all instances of improper staying and broken, leaking, or defective containers of explosives or other dangerous articles in shipments received by them.

(b) The Bureau of Explosives, upon receipt of reports from consignees, should promptly report to the shipper full particulars covering all cases of defective packing, improper staying, leaking and/or broken shipping containers and rough treatment of cars resulting in leakage or damage to shipping containers or staying.

### § 74.566 Cleaning cars.

(a) Cars which have contained arsenic, arsenate of lead, sodium arsenate, calcium arsenate, Paris green, calcium cyanide, potassium cyanide, sodium cyanide, or other poisonous articles, which show any evidence of leakage from packages, must be thoroughly cleaned after unloading before cars are again placed in service.

(b) After unloading poisons or potassium permanganate from steel hopper cars or other cars, cars must be thoroughly flushed out with water except that cars used exclusively in this service under the provisions of §§ 73.194(a)(3) and 73.368(a) of this chapter shall not be subject to this requirement.

(c) All loose powder or other explosive or any other dangerous article which has leaked from packages must be carefully removed from car and other railroad property.

(d) Any box car which, after use for the transportation of radioactive materials in carload lots, is contaminated with such materials to the extent that a survey of the interior surface shows that the beta-gamma radiation is greater than 10 milliroentgens physical equivalent in 24 hours or that the average alpha contamination is greater than 500 disintegrations per minute per 100 square centimeters shall be thoroughly cleaned in such a manner that a resurvey of the interior surface shows the contamination to be below these levels. A certificate to that effect must be furnished to the local agent of the carrier. Cars which are used solely for the transportation of radioactive materials are exempt from the provisions of this section.

### § 74.567 Flammable vapors.

(a) A box car or container car placarded "Dangerous", or known to contain flammable liquids, gases, or vapors must not be entered with a lighted open-flame lantern, torch, or other fire, until both car doors have been opened and sufficient time allowed for ventilation and escape of any vapors. The presence of these vapors will generally be indicated by characteristic odors. When leakage is continuous, ventilation will not remove the danger. The leaking package should be located and removed, using electric lights or waiting for daylight.

## Subpart E—Handling by Carriers by Rail Freight

### § 74.575 Restrictions.

(a) When local conditions make the acceptance, transportation, or delivery of explosives or other dangerous articles unusually hazardous, local restrictions may be imposed by the carrier.

(b) All carriers must report to the Bureau of Explosives for publication full information as to restrictions which may be imposed against the acceptance, delivery, or transportation of explosives or other dangerous articles, over any portion of their lines.

### § 74.576 Intermediate shippers and carriers.

(a) Forwarding companies must have on file shipper's certified bill of lading or shipping order, and know that packages delivered to carrier for transportation comply with Parts 71–78 of this chapter.

(b) Every carrier offering or delivering for rail transportation any loaded motor vehicle or any loaded motor vehicle trailer, semi-trailer, or container containing any shipment of an explosive or other dangerous article shall show on the shipping order, shipping paper, transfer sheet, or other billing issued in lieu thereof, in addition to the description of the vehicle or container, the proper and definite name of the commodity as shown

in § 72.5 of this chapter and the color or kind of label or kind of placards applied.

**§ 74.577 Shipping days for explosives.**

(a) When practicable at any point, regular days should be assigned for receiving from shippers less-than-carload lots of explosives, class A, as shown in Part 73 of this chapter.

(b) To enable the carrier to provide proper cars at stations where less-than-carload shipments of explosives, class A, are accepted for loading by the carrier, the shipper must give to the carrier not less than 24 hours' notice of his intention to offer such shipments, and state their destinations. When a regular day to receive all explosives shipments offered at such a station has been appointed, this notice may be waived by the carrier, but the explosives shipments must be delivered on such days in time to permit proper inspection, billing, and loading on that day.

**§ 74.578 Flammable vapors.**

(a) A box car or container car placarded "Dangerous," or known to contain flammable liquids, must not be entered with a lighted open-flame lantern, torch, or other fire, until both car doors have been opened and sufficient time allowed for ventilation and escape of any vapors. The presence of these vapors will generally be indicated by characteristic odors. When leakage is continuous, ventilation will not remove the danger. The leaking package should be located and removed, using electric lights or waiting for daylight.

**§ 74.579 Cars containing lading which has been fumigated or treated with flammable liquids, flammable gases, poisonous liquids or solids, or poisonous gases.**

(a) Delivery to carrier or transportation of cars containing lading fumigated or treated with flammable liquid or flammable gas is prohibited until 48 hours have elapsed after such fumigation or treatment, or until car has been ventilated so as to remove danger of fire or explosion due to the presence of flammable vapors.

(b) Cars containing lading which has been fumigated or treated with poisonous liquid, solid, or gas, such as carbolic acid, liquid or solid, chlorpicrin, hydrocyanic acid, methyl bromide, etc., must be placarded on each door or near thereto with placard reading as follows (for cleaning cars, see § 74.566):

(Reduced size)

(Red lettering on white cardboard)

10 inches

DANGER

The lading of this car has been
FUMIGATED or
TREATED
with

(Name of poisonous liquid, solid, or gas)

BEFORE UNLOADING, open both doors and DO NOT ENTER until car is free of gas. REMOVE ALL POISONOUS MATERIAL before release of empty car.

8 inches

**§ 74.580 Violations must be corrected.**

(a) All violations discovered must be corrected before forwarding shipments of explosives.

**§ 74.581 Routing shipments.**

(a) Before any shipment of explosives, class A, as named in §§ 73.53 to 73.87 of this chapter, destined to a point beyond the lines of the initial carrier, is accepted from a shipper, the initial carrier must ascertain that the shipment can go forward by the route designated, and to avoid delays en route the initial carrier must be in possession of full rate information, before forwarding the shipment.

**§ 74.582 Movement to be expedited.**

(a) Carriers must forward shipments of explosives and other dangerous articles promptly and within 48 hours, Saturdays, Sundays, and holidays excluded, after acceptance at originating point or receipt at any yard, transfer station, or interchange point, except that where biweekly or weekly service only is performed, shipments of explosives and other dangerous articles must be forwarded on the first available train.

(b) No tank car loaded with flammable liquid, flammable poison gas or compressed flammable gas shall be received and held at any point, subject to forwarding orders, so as to defeat the purpose of this section or of § 74.560.

**§ 74.583 Examination of shipping order and packages.**

(a) Carriers must examine shipping order and determine that proper certificate, as required under § 73.430 of this chapter, is given and that packages are not broken or leaking when offered for transportation.

**§ 74.584 Waybills, switching orders, or other billing.**

(a) The revenue waybill, astray waybill, switching order or any other billing issued in lieu thereof, prepared from the shipping order or other shipping paper, or shipping orders used as waybills, must describe the article by shipping name as prescribed in § 72.5 of this chapter, and must show the color or kind of label notations for less-than-carload shipments or placard notations for carload shipments of explosives and other dangerous articles and placard indorsement as follows:

| | Label notation to follow entry of the article on the billing | Placard notation to follow entry of the article on the billing | Placard endorsement must be ⅜" high and appear on the billing near the space provided for the car number |
|---|---|---|---|
| For high explosives, initiating explosives, low explosives, and blasting caps or electric blasting caps more than 1,000 in quantity, class A. | None | "Explosives Placard" | "Explosives". |
| For explosive chemical ammunition containing class A poison gas. | Poison gas label | "Explosives and Poison Gas Placard". | "Explosives" and "Poison Gas". |
| For explosives, class B | None | "Dangerous Placard" | "Dangerous". |
| For explosives, class C | do | None | None. |
| For flammable liquids | Red label | "Dangerous Placard" | "Dangerous". |
| For flammable solids | Yellow label | do | Do. |
| For oxidizing materials | do | do | Do. |
| For corrosive liquids | White label | do | Do. |
| For compressed nonflammable gases in containers other than tank cars. | Green label | None | None. |
| For compressed nonflammable gases in tank cars. | None | "Dangerous Placard" | "Dangerous". |
| For compressed flammable gases | Red gas label | do | Do. |
| For poisonous gases or liquids, class A. | Poison gas label | "Poison Gas Placard" | "Poison Gas". |
| For flammable poisonous liquids, class A, in tank cars. | None | "Flammable Poison Gas Placard". | "Flammable Poison Gas". |
| For poisonous liquids, class A, in tank cars. | None | "Poison Gas Placard" | "Poison Gas." |
| For poisonous liquids or solids, class B. | Poison label | "Dangerous Placard" | "Dangerous". |
| For tear gases, class C | Tear gas label | None | None. |
| For radioactive materials, class D poison. | Radioactive material label. | "Dangerous Radioactive material Placard".[1] | "Radioactive material".[1] |
| For tank cars filled with water or inert gas and last containing phosphorus. | None | "Caution—this car contains residual phosphorus and must be kept filled with (water) or (inert gas)". | "Caution—Residual Phosphorus". |
| For empty tank cars that last contained flammable poisonous liquids, class A. | None | "Dangerous-Flammable Poison Gas-Empty Placard". | "Dangerous—Flammable Poison Gas—Empty". |
| For empty tank cars that last contained poisonous liquids, class A | None | "Dangerous—Poison Gas—Empty Placard." | "Dangerous—Poison Gas—Empty." |

[1] These requirements do not apply to billing prepared for shipments of magnesium-thorium alloys or uranium depleted or normal, described in § 73.392 (e) and (f) of this chapter and bearing red label as described in § 73.414(d) of this chapter.

(b) Billing prepared from the shipping order or other shipping paper covering shipments of blasting caps, must, in addition, show the number of blasting caps in the shipment.

(c) Waybills, manifests, or memorandums for shipments offered for transportation by carrier by water must show the label notations as prescribed in this section.

(d) Abbreviations must not be used on shipping orders or billing for explosives or other dangerous articles.

(e) When the initial movement is a switching operation, the switching order, switching receipt or switching ticket, and copies thereof, prepared by the shipper, or by the carrier under the shipper's written authority, must bear the placard indorsement and the shipper's certificate prescribed by § 73.430 of this chapter and paragraph (a) of this section; for other switching movement, the switching ticket prepared by a railway employee must show the kind of placard required.

(f) The car ticket, card waybill, running slip, envelope containing waybills, or any other billing for any loaded car which in this chapter should bear "Explosives", "Dangerous", "Dangerous—Radioactive material", "Poison Gas", or "Flammable Poison Gas" placards must have plainly stamped, or plainly written, on the face of such billing, near the car number, in letters not less than three-eighths of an inch high, the words "Explosives", "Dangerous", "Dangerous—Radioactive material", "Poison Gas", or "Flammable Poison Gas"; and for container cars must also show which of the containers loaded thereon contain dangerous articles.

(g) For tank cars not loaded, the billing must show the word "Empty", except that for tank cars previously loaded with white or yellow phosphorus the billing must show the words "Caution—This car contains residual phosphorus and must be kept filled with (water) or (inert gas)".

(1) For tank cars that last contained poisonous liquids, class A, the billing must show the words "Dangerous—Poison Gas—Empty" except the billing for tank cars that last contained hydrocyanic acid must show the words "Dangerous—Flammable Poison Gas—Empty."

(h) At stations, or other points, where other shipments of any material are loaded into a properly certified and placarded car received with shipments of explosives, or when shipments of explosives are transferred or reloaded, or carload shipments are reconsigned, a record must be kept of the car, originating point, carrier's name and date of car certificate. The blocking or bracing at these points to secure the lading must be inspected as provided in § 74.525 and certified for compliance with these regulations by the person making the inspection who shall sign the car certificates immediately below the signature which appears on certificate No. 2 of the original car certificates attached to the car.

**§ 74.585 Nonagency shipments.**

(a) If shipments of explosives are accepted at nonagency stations, provisions must be made for the proper certification and placarding of cars, examination of shipments, and loading and staying of packages in cars.

**§ 74.586 Handling explosives and other dangerous articles.**

(a) In handling packages of explosives at stations and in transferring them to and from cars, the greatest care must be taken, and shocks or falls liable to injure the containers must be avoided. Where an inclined chute is employed, such chute shall be constructed of 1-inch planed boards, with side guards 4 inches high extending 3 inches above top face of bottom of chute and throughout its length, fastened with brass screws. D-shaped wooden strips or runners, not more than 6 inches apart and running lengthwise of chute, must be fastened to the upper surface of the bottom board by means of glue and wooden pegs extending through the bottom board and runners. Chutes must be occasionally wiped down with waste moistened with machine oil when dynamite packages are being handled.

(b) A stuffed mattress, 4 feet wide by 6 feet long and not less than 4 inches thick, or a heavy jute or hemp mat of like dimensions, must be placed under the discharging end of the chute.

(c) Careful men must be chosen to handle explosives, the platform and the shoes of the men must be as free as possible from grit, and all possible precautions must be taken against fire.

(d) Unauthorized persons must not have access to explosives and other dangerous articles at any time while such articles are in the custody of the carrier.

(e) Explosives and other dangerous articles must be kept in a safe place while being held for delivery or loading.

(f) In handling packages containing dangerous articles other than explosives at stations, and to and from cars, care must be taken to prevent their falling or being broken. Heavy packages should be trucked, rolled, or moved by use of skids or other satisfactory devices and must not be dropped from trucks, platforms, or cars. Planks for rolling trucks from platforms to cars should have beveled ends.

(g) Acid or other corrosive-liquid carboys should be handled so as not to spill the contents. "Empty" carboys, so called, should be handled with necks up, and with sufficient care to prevent burns to clothing or person from leaking acid or other corrosive liquid.

(h) A container of radioactive material bearing red label must not be placed in cars, depots or other places closer than 3 feet to an area which may be continuously occupied by passengers, employees, or shipments of animals. When more than one such container is present, the distance from occupied areas must be computed from the table in subparagraph (2) of this paragraph by adding the number of units shown on labels on the containers.

(1) In a combination car carrying passengers and/or express shipments, a container of radioactive material must not be placed closer than 3 feet to the dividing partition. For more than one such container the distance must be computed by method described in subparagraph (2) of this paragraph.

(2) A container of radioactive material, red label, must not be placed closer than 15 feet to any package containing undeveloped film. If more than one such container is present, the distance must be computed from the table in this subparagraph by adding the number of units shown on the labels on the packages.

TABLE

| Total number of units | Minimum distance in feet to nearest undeveloped film | Distance in feet to area that may be continuously occupied by passengers or employees | Distance in feet from dividing partition of a combination car |
|---|---|---|---|
| 1 to 10 | 15 | 3 | 3 |
| 11 to 20 | 20 | 4 | 4 |
| 21 to 30 | 25 | 5 | 5 |
| 31 to 40 | 30 | 6 | 6 |

NOTE 1: The distance in the table must be measured from the nearest point of the radioactive container or containers.

NOTE 2: 1 unit equals 1 milliroentgen per hour at 1 meter for hard gamma radiation or the amount of radiation which has the same effect on film as 1 mrhm. of hard gamma rays of radium filtered by ½ inch of lead.

(3) Not more than 40 units of radioactive material (red label) shall be transported in any car or stored in any location at one time.

(4) All containers of radioactive material (red label) must be carried by the handles when handles are provided.

NOTE 1: The requirements of this paragraph shall not apply to magnesium-thorium alloy materials or uranium, depleted or normal, described in § 73.392 (e) and (f) of this chapter. The location of bundles, boxes, barrels, or crates of such material from packages of undeveloped film must be as stated on the label (see § 73.414(d) of this chapter).

**§ 74.587 Lights.**

(a) When necessary to use lights while handling explosives, it is recommended that where practicable incandescent electric lights be provided.

**§ 74.588 Disposition of damaged or astray shipments.**

(a) Packages of explosives found injured or broken in transit may be recoopered when this is evidently practicable and not dangerous. A broken box of high explosives that cannot be recoopered should be reinforced by stout wrapping paper and twine, placed in another strong box and surrounded by dry, fine sawdust or dry and clean cotton waste or elastic wads made from dry newspapers. A ruptured can or keg should be sealed with tape and should be inclosed in a grain bag of good quality and boxed. Injured packages thus protected and properly marked may be forwarded. The box and waybill should be marked to indicate that it has been repacked.

(b) Particles of explosive compositions from damaged containers possibly may be strewn on car floors or freight, and due care should be exercised in repacking such containers that no sparks may be produced by contact of metal or other hard surfaces, or otherwise. Water will prevent the explosion of practically all explosive substances except dynamite, and in such cases car floors should be thoroughly swept, and washed with a plentiful supply of water. Use of iron-wheel trucks, metal hammers or other metal tools that may produce sparks, should be avoided. This restriction does not apply to metal tools made of brass, bronze or copper.

(c) Unless they are leaking, or in a manifestly insecure condition, packages of dangerous articles other than explo-

sives in transit must be forwarded to destination and report made of any violation observed. Leaking packages must not be forwarded until repaired or reconditioned. Packages of radioactive materials (class D poisons) which show any evidence of rough handling, leakage, or impending failure must be isolated from danger of human contact until qualified persons are available to supervise handling. The shipper and the Bureau of Explosives should be notified promptly.

(d) Packages of explosives showing evidence of leakage of liquid ingredients must (1) be returned immediately to shipper, if at point of shipment; or (2) disposed of to a person who is competent and willing to remove them from railway property, if leakage is discovered while in transit; or (3) removed immediately by consignee, if shipment is at destination.

(e) When disposition cannot be made as above, the leaking boxes must be packed in other boxes large enough to permit inclosure, and the leaking boxes must be surrounded by at least 2 inches of dry, fine sawdust or dry and clean cotton waste, and be stored in station magazine or other safe place until arrival of an inspector of the Bureau of Explosives, or other authorized person, to superintend the destruction or disposition of the condemned material.

(f) An astray shipment of explosives must be forwarded immediately to its destination if known, or returned to the shipper by the most practicable route, provided a careful inspection shows the packages to be in proper condition for safe transportation.

(g) When a package in an astray shipment is not in proper condition for safe transportation (see paragraphs (a), (d), and (e) of this section), or when name and address of consignee or shipper are unknown, disposition must be made as prescribed by paragraphs (d) and (e) of this section.

(h) An astray package of dangerous articles other than explosives of known destination and in proper condition for safe transportation, must be forwarded immediately on an "astray bill", showing proper label notation and placard indorsement, as prescribed by § 74.584 (a) to (f). When necessary to replace a label and doubt exists as to the kind, the red label should be used.

**§ 74.589 Handling cars.**

(a) *Definitions.* (1) "Person" means any individual, partnership, corporation, association, joint stock company, business trust or other organized group of persons, or any trustee, receiver, assignee, or personal representative, and includes any department or agency of the United States, any State, the District of Columbia, or any other political, governmental or legal entity;

(2) "Railroad" means any person engaged in transportation as a common carrier by rail and includes its agents or employees;

(3) "Engine" means any locomotive, propelled by any form of energy, used by a railroad;

(4) "Freight car" means any vehicle used for the transportation of property by rail;

(5) "Passenger car" means any vehicle used for the transportation of passengers by rail;

(6) "Combination car" means any vehicle used for the transportation of both property and passengers by rail;

(7) "Occupied caboose" means any vehicle used by railroad employees, caretakers, or others authorized to ride therein;

(8) "A train" is one or more engines coupled together with or without cars displaying markers;

(9) "Freight train" means one or more engines coupled with one or more freight cars, displaying markers;

(10) "Passenger train" means one or more engines coupled with one or more passenger cars carrying passengers, displaying markers;

(11) "Mixed train" means one or more engines coupled with one or more freight cars and passenger cars carrying passengers, displaying markers;

(12) "Placarded car" shall be construed to embrace also any car which under this part is required to be placarded;

(13) "Pickup and/or setoff service" shall be construed to mean trains in service that pick up and/or set off one or more cars at three or more stations en route; trains having cars from which less-than-carload freight is loaded or unloaded en route; or trains regularly scheduled to perform pickup and/or setoff service which on some days make less than three stops.

(b) *Placards on cars.* A car requiring car certificates and "Explosives," "Dangerous," "Dangerous—Radioactive Material," "Poison Gas," "Flammable Poison Gas," "Dangerous—Empty Flammable Poison Gas," "Dangerous—Empty Poison Gas" or "Caution—Residual Phosphorus" placards under the provisions of this part shall not be transported unless such freight car is at all times placarded and certificated as required. Placards and car certificates lost in transit shall be replaced at the next inspection point, and those not required shall be removed at the next terminal where the train is classified.

(1) At points where trains are inspected, cars placarded "Explosives" and adjacent cars shall be inspected; such cars shall continue in movement only when inspection shows them to be in condition for safe transportation.

(c) *Switching cars containing explosives, poison gas, or flammable poison gas or placarded trailers on flat cars.* A car placarded "Explosives", "Poison Gas", or "Flammable Poison Gas", or any flat car carrying a trailer placarded "Explosives", "Poison Gas", "Dangerous", or "Dangerous-Radioactive Material" shall not be cut off while in motion. No car moving under its own momentum shall be allowed to strike any car placarded "Explosives", "Poison Gas", or "Flammable Poison Gas", or any flat car carrying a trailer placarded "Explosives", "Poison Gas", "Dangerous", or "Dangerous-Radioactive Material", nor shall any such car be coupled into with more force than is necessary to complete the coupling.

(1) When transporting a car placarded "Explosives" in terminals, yards, side tracks, or sidings, such cars shall be separated from the engine by at least one nonplacarded car.

(2) Closed cars placarded "Explosives" shall have doors closed before they are moved.

(d) *Switching of cars containing dangerous articles.* In switching operations where use of hand brakes is necessary, a placarded loaded tank car, or a draft which includes a placarded loaded tank car shall not be cut off until the preceding car or cars clear the ladder track and the draft containing the placarded loaded tank car, or a placarded loaded tank car shall in turn clear the ladder before another car is allowed to follow.

(1) In switching operations where hand brakes are used, it shall be determined by trial that a car placarded "Dangerous" or that a car occupied by a rider in a draft containing a car placarded "Dangerous" has its hand brakes in proper working condition before it is cut off.

(e) *Placement of freight cars containing explosives in yards, on sidings, or sidetracks.* Cars placarded "Explosives" shall be so placed that they will be safe from all probable danger of fire. Freight cars placarded "Explosives" shall not be placed under bridges or overhead highway crossings, nor in or alongside of passenger sheds or stations except for loading or unloading purposes.

(f) *Notice to crews of cars containing explosives in freight trains or mixed trains.* At all terminals or other places where trains are made up by crews other than road crew accompanying the outbound movement of cars, the railroad shall execute a consecutively numbered notice showing the location in the freight train or mixed train of every car placarded "Explosives." A copy of such notice shall be delivered to the train and engine crew and a copy thereof showing delivery to the train and engine crew shall be kept on file by the railroad at each point where such notice is given. At points where train or engine crews are changed, the notice shall be transferred from crew to crew.

(g) *Position in freight train or mixed train of cars containing explosives.* In a freight train or a mixed train either standing or during transportation thereof, a car placarded "Explosives" shall, when length of train permits, be placed not nearer than the sixteenth car from both the engine or occupied caboose, except:

(1) When the length of freight train or mixed train will not permit it to be so placed, it shall be placed near the middle of the train.

(2) When transported in a freight train made up in "blocks" or classifications, a car placarded "Explosives" shall be placed near the middle of the "block" or classification in which moving, but not nearer than the sixth car from both the engine or occupied caboose.

(3) When transported in a freight train or a mixed train performing pickup and/or setoff service, it shall be placed not nearer than the second car from both the engine or occupied caboose, except as provided in paragraph (1) of this section.

(h) *Separating cars or flat cars carrying trailers or containers placarded "EXPLOSIVES" from other cars in trains.* In a freight train or a mixed train either standing or during transportation thereof, a car or flat car carrying trailers or containers placarded "EXPLOSIVES" must not be handled next to:

(1) Occupied passenger car; except as provided in paragraph (i) of this section.

(2) Occupied combination car; except as provided in paragraph (i) of this section.

(3) Any car placarded "Dangerous" or "Dangerous-Radioactive material".

(4) Engine.

(5) Any car placarded "Poison Gas" or "Flammable Poison Gas".

(6) Wooden underframe car (except on narrow gauge railroads).

(7) Loaded flat car, except that cars carrying trailers or containers placarded "Explosives" as authorized by the regulations in this chapter may be coupled to each other.

NOTE: Flat cars equipped with permanently attached ends of rigid construction shall be considered as open-top cars. See subparagraph (8) of this paragraph.

(8) Open-top car when any of the lading protrudes beyond the car ends or when any of the lading extending above the car ends is liable to shift so as to protrude beyond the car ends.

(9) Car, with automatic refrigeration or heating apparatus in operation; car, with open-flame apparatus in service or with internal combustion engine in operation.

(10) Car containing lighted heaters, stoves, or lanterns.

(11) Car loaded with live animals or fowl, occupied by an attendant.

(12) Occupied caboose, except as provided in paragraph (i) of this section.

(i) *Position in train of loaded placarded tank car.* In a freight train or a mixed train, except a train consisting entirely of placarded loaded tank cars and as provided in paragraph (j) of this section, a placarded loaded tank car shall when the length of the train permits, be not nearer than the sixth car from the engine, occupied caboose or passenger car.

(1) When the length of the freight train or mixed train will not permit it to be so placed, it shall be not nearer than the second car from the engine, occupied caboose or passenger car.

(2) When transported in a freight train engaged in "pickup" or "setoff" service, a placarded loaded tank car shall be not nearer than the second car from both engine or occupied caboose.

(j) *Separating loaded tank cars placarded "Dangerous" from other cars in trains.* In a freight train or mixed train either standing or during transportation thereof, a placarded loaded tank car must not be handled next to:

(1) Occupied passenger car, other than cars occupied by gas handlers and authorized personnel accompanying shipment.

(2) Occupied combination car, other than cars occupied by gas handlers and authorized personnel accompanying shipment.

(3) Any car placarded "Explosives".

(4) Engine or occupied caboose (except when train consists only of placarded loaded tank cars).

(5) Any car placarded "Poison Gas" or "Flammable Poison Gas".

(6) Wooden under-frame car (except on narrow gauge railroads).

(7) Loaded flat car, other than specially equipped cars in trailer-on-flat-car service or flat cars loaded with automobiles, trucks, or trailer bodies which are secured by means of a device or devices designed and permanently installed on the flat car for that purpose and of a type generally accepted for handling in interchange between railroads.

NOTE: Flat cars equipped with permanently attached ends of rigid construction shall be considered as open-top cars. See subparagraph (8) of this paragraph.

(8) Open-top car when any of the lading protrudes beyond the car ends or when any of the lading extending above the car ends is liable to shift so as to protrude beyond the car ends.

(9) Car, trailers or truck bodies on flat car with automatic refrigeration or heating apparatus in operation; car, trailers or truck bodies on flat car with open-flame apparatus in service or with internal combustion engines in operation.

(10) Car, trailers or truck bodies on flat car containing lighted heaters, stoves or lanterns except when car is occupied by gas handlers or authorized personnel accompanying shipment.

(11) Car loaded with live animals or fowl, occupied by an attendant.

(k) *Position in freight train or mixed train of cars placarded "POISON GAS," "FLAMMABLE POISON GAS," or containing poison liquids, class A.* In a freight train or mixed train either standing or during transportation thereof, a car placarded "POISON GAS," "FLAMMABLE POISON GAS" or containing poison liquids, class A, shall not be next to other freight cars placarded "EXPLOSIVES" or cars placarded "DANGEROUS."

(1) In a freight train or mixed train either standing or during transportation thereof, a loaded tank car placarded "POISON GAS," or "FLAMMABLE POISON GAS," must not be handled next to:

(i) Occupied passenger car, other than cars occupied by gas handlers and authorized personnel accompanying shipment.

(ii) Occupied combination car, other than cars occupied by gas handlers and authorized personnel accompanying shipment.

(iii) Any car placarded "EXPLOSIVES."

(iv) Engine or occupied caboose.

(v) Any car placarded "DANGEROUS."

(vi) Wooden under-frame car (except on narrow gauge railroads).

(vii) Loaded flat car, other than specially equipped cars in trailer-on-flat-car service or flat cars loaded with automobiles, trucks, or trailer bodies which are secured by means of a device or devices designed and permanently installed on the flat car for that purpose and of a type generally accepted for handling in interchange between railroads.

NOTE: Flat cars equipped with permanently attached ends of rigid construction shall be considered as open-top cars. See subdivision (viii) of this paragraph.

(viii) Open-top car when any of the lading protrudes beyond the car ends or when any of the lading extending above the car ends is liable to shift so as to protrude beyond the car ends.

(ix) Car, trailers or truck bodies on flat car with automatic refrigeration or heating apparatus in operation; car, trailers or truck bodies on flat car with open-flame apparatus in service or with internal combustion engines in operation.

(x) Car, trailers or truck bodies on flat car containing lighted heaters, stoves or lanterns except when car is occupied by gas handlers or authorized personnel accompanying shipment.

(xi) Car loaded with live animals or fowl, occupied by an attendant.

(l) *Position in freight train or mixed train of cars placarded "Explosives" or "Poison Gas", or both, and cars placarded "Flammable Poison Gas" when accompanied by cars carrying guards or gas handling crews.* A car requiring "Explosives" or "Poison Gas" placards, or both, and a car requiring "Flammable Poison Gas" placards, shall be next to and ahead of the car occupied by the guards or gas handling crews accompanying such car; except that when the car occupied by guards or gas handling crews is equipped with a lighted heater or stove it shall be the fourth car behind a car or cars requiring "Explosives" placards.

(m) *Cars containing explosives, poison gas, or flammable poison gas and tank cars placarded "Dangerous" in passenger or mixed trains.* Cars containing explosives, class A, poison gases or liquids, class A, or flammable poison gas, and tank cars requiring "Dangerous" placards shall not be transported in a passenger train. Such cars may be transported in mixed trains but only at such times and between such points that freight train service is not in operation.

(1) Cars containing explosives, class A, poison gases or liquids, class A, or flammable poison gas, and tank cars placarded "Dangerous" shall not be transported next to occupied cabooses or cars carrying passengers in mixed trains, except as provided in paragraph (l) of this section.

(2) When a car containing explosives, class B, or dangerous articles other than explosives requiring labels (not including class A poison gases or liquids) is moved in a mixed train and such car is not occupied by an employee of the carrier, placards must be applied to the car as required by this part.

(n) *Position in train of cars containing class D poisons.* In a freight train or mixed train either standing or during transportation thereof, a car placarded "Dangerous—Radioactive material" must not be handled next to cars placarded "Explosives" or next to carload shipments of undeveloped film.

**§ 74.590 Record of change of seals of cars of explosives to be made.**

(a) When a car seal is changed on a car placarded "Explosives" while en route or before delivery to a consignee, a record must be made showing the following information which shall be shown on or attached to waybill or other form of memorandum which shall accompany car to destination.

| Railroad | Place | Date |
|---|---|---|

Car initials Car number

Number or description of seal broken_____

Number or description of seal used to reseal car_____

Reasons for opening car_____

Conditions of load_____

Name and occupation of person opening car

**§ 74.591 Car magazines.**

(a) When specially authorized by the carrier, class A explosives in quantity not exceeding 150 pounds may be carried in construction or repair cars when the packages of explosives are placed in a "magazine" box made of sound lumber not less than 1 inch thick, covered on the exterior with metal, and provided with strong handles. This box must be plainly stenciled on the top, sides, and ends, in letters not less than 2 inches high, "EXPLOSIVES—DANGEROUS—HANDLE CAREFULLY". The box must be provided with strong hinges and with a lock for keeping it securely closed. Vacant space in the box must be filled with a cushioning material such as sawdust or excelsior, and the box must be properly stayed to prevent movement within the car. The car, when not occupied by a responsible employe, must be placarded "EXPLOSIVES".

**§ 74.592 Cotton fires.**

(a) When fire occurs in a shipment of cotton in transit at a point where it cannot be reconditioned, and where arrangements cannot be made with the originating line to sell it, all burnt cotton in the shipment must be stored under observation in as safe a place as practicable for not less than 10 days, and without further evidence of fire, before forwarding. The billing must be changed to read "Burnt Cotton", and the material must be forwarded as a dangerous article. (See § 73.159 of this chapter.)

**§ 74.593 Charcoal fires.**

(a) When fire occurs in charcoal in transit, water should not be used if it is practicable to locate and remove the material on fire, since wet charcoal is much more liable to ignite spontaneously, and the fire cannot be stopped permanently by the use of water. Any material which has become wet in extinguishing fire must be removed from the car and not reshipped; the remainder of the charcoal must be held under observation in a dry place for at least five days before forwarding.

**§ 74.594 Leaking tank cars.**

(a) Action in any particular case will depend upon existing conditions, and good judgment will be necessary to avoid disastrous fires on the one hand and useless sacrifice of valuable property on the other.

(b) Volatile, flammable, and combustible liquids, or flammable liquefied gases, such as gasoline, naphtha, petroleum oils, or liquefied petroleum gas, in large quantity and spread over a large surface, will form vapors that will ignite at a considerable distance, depending on the kind and quantity of liquid and the direction and force of the wind. Many of the liquids, regarded as safe to carry under ordinary conditions and transported in tank cars without the "Dangerous" placard, should still be treated as dangerous in handling a wreck.

(c) When tank cars are leaking, all lights or fires near them should be extinguished or removed until it is determined that contents are not flammable or combustible. Incandescent electric lights, or portable electric flash-lights should be used when available.

(d) Lanterns necessarily used for signaling should be kept on the side from which the wind is blowing and at as high an elevation as can be obtained. The vapors will go with the wind but not against it. The ash pan and fire box of a locomotive or steam derrick are sources of danger, especially when wind is blowing across the wrecked or leaking tank car toward them. Wrecks involving tank cars should in no case be approached with lighted pipes, cigars, or cigarettes, and all spectators should be kept away.

(e) Effort should be made to prevent the spread of liquid leakage over a large surface by collecting it in any available vessels or draining it into a hole or depression at a safe distance from the track. When necessary, trenches should be dug for this purpose.

(f) It is not safe to drain flammable or combustile liquids in large quantities into a sewer, since vapors may thus be carried to distant points and there ignited. Care should be exercised also not to permit these liquids to drain into streams of water which may be used by irrigation plants or for watering stock. Dry earth over spilled liquid will decrease the rate of evaporation and the danger. A stream of these liquids on the ground should be dammed and dry earth thrown on the liquid as it collects.

(g) Sudden shocks or jars that might produce sparks or friction should be avoided. When possible, the wrecked cars should be jacked carefully into position after removing other cars and freight that might be injured by fire. Only as a last resort, to meet an emergency, should a wrecked car be moved by dragging, and when this is done all persons should be kept at a safe distance. (See § 74.600.)

(h) No unnecessary attempt should be made to transport a damaged tank car from which flammable or combustible liquid is leaking. Safety in short movements may be secured by attaching a receptacle under small leaks to prevent spread of these liquids over tracks. Tracks at intervals in rear of a moving car should be covered with fresh earth to prevent fire overtaking the car. Engines should be kept away; also spectators who may be smoking. If damaged car is derailed, and not in a position to obstruct or endanger traffic, leaks should be stopped as far as possible, and the car should be left under guard until another tank car or sufficient receptacles can be provided for the transfer of the liquid, which should be transferred by pumping when practicable.

(i) Highly volatile products cannot be transferred in the usual way by a vacuum pump. The pump can only be used when placed so that liquid flows to it from the tank by gravity.

(j) Whenever the leaking condition of a tank car requires transfer of lading or renders the tank unfit for reloading, the car must be stenciled on both sides in letters three inches in size, adjacent to the car number, "Leaky Tank. Do Not Load Until Repaired", and indicate and mark at the location of the leak with the symbol "X", and the owner must be immediately notified by wire, such notification to indicate definitely location of leak. Stenciling must not be removed until the tank is repaired.

(k) Even a tank that is not leaking is liable to be ruptured by the use of slings, and slipping of chain slings may produce sparks. Saving of the contents of the tank is not as important as the prevention of fire.

(l) An empty or partially empty tank car, with or without placards, is very liable to contain explosive gases, and open flame lights must not be brought near it. (See § 74.595.)

**§ 74.595 Examination of empty tank cars.**

(a) Lighted lanterns. Many fatal accidents have resulted from using lanterns or lighted matches to examine the interior of empty tank cars or in using hot rivets to repair unsteamed tank cars, which may contain flammable vapors even when the previous lading was not of flash point below 80° F. Only incandescent electric lights should be used for this examination. Fumes in any empty tank car should be considered as injurious to a person entering it. In no case should an empty tank be entered before it has been cleaned by steaming, without wearing a respirator, hose mask type only, and without having another person stationed at the manhole with a rope attached to the person entering the tank. Hobnailed shoes and metal tools are liable to create sparks and should not be used inside an empty tank.

(1) Small quantities of the material with which the tank car was loaded may remain in the "empty" tank car and when the vapors remaining therein are unstable it is permissible to add sufficient inert gas to render the vapors stable.

**§ 74.596 Inspection of tank cars.**

(a) Placarded loaded tank cars must be inspected by the carrier before acceptance at the originating points and when received in interchange to see that they are not leaking and that the air and hand brakes, journal boxes, and trucks are in proper condition for service.

(b) Empty tank cars previously containing a dangerous article tendered for movement or when received in interchange must have manhole covers, outlet valve reducers, outlet valve caps, outlet valve cap plugs, end plugs, and plugs or caps of other openings securely in their proper places; except that heater coil inlet and outlet pipes must be left open for drainage.

(c) Safety valves on tank cars must not be tested while these cars are loaded. Whenever test of safety valves or tank is due on a loaded car while in transit, unless the car is leaking or in a manifestly insecure condition, it must be forwarded to destination, carded on each side with a card exhibiting the following notice:

Safety valves / Tank } Overdue for test.
Moving under I. C. C. § 74.596 (c).

(1) Prompt reports of such movements, showing initials and numbers of cars, must be made by the railroad carding the cars to the Bureau of Explosives, 63 Vesey Street, New York 7, New York.

**§ 74.597 Leaking packages of acid or poisons.**

(a) Whenever a car bearing the "Dangerous" placard is discovered in transit with packages in leaking condition, all unnecessary movement of the car must cease and at the first opportunity an examination must be made of the lading, and if practicable any broken or leaking packages of nitric or mixed acids should be removed promptly to prevent fire. Any acid or other corrosive liquid remaining on the car floor or on surrounding packages should be washed away with a plentiful supply of water, or if not available, cleaned up with a liberal application of sand or earth. Care should be exercised to prevent inhalation of gases liberated through the application of water; when employes are injured by acid or other corrosive liquid, the liquid should be washed off immediately by a liberal application of water.

(b) Cars which have contained arsenic, arsenate of lead, sodium arsenate, calcium arsenate, Paris green, calcium cyanide, potassium cyanide, sodium cyanide, or other poisonous articles, which show any evidence of leakage from packages, must be thoroughly cleaned after unloading before cars are again placed in service.

(c) Leakage of dangerous articles is often accompanied by odors characteristic of the articles, and all available opportunities for noting such odors must be utilized in order that the source of leakage may be discovered and the leakage stopped, or the leaking package removed from the car, or the contents of tank cars transferred. If artificial light is necessary, only electric lights should be used. Leaking tank cars containing compressed gases should be switched to a location distant from habitation and highways and proper action taken for transferring contents under competent supervision.

(d) Cars containing leaking packages or leaking tank cars must be protected against ignition of liquid or vapors by flame of inspector's lanterns or torches, by burning fusees, by switch-lights, by switch-thawing flames, by fires on side of track, by hot coals from locomotives, or otherwise. All unnecessary movement of a car discovered in transit in leaking condition must cease until the unsafe condition is remedied.

(e) *Radioactive materials—Poison class D.* In event of breakage of container, wreck, fire, or unusual delay involving cars placarded "Dangerous—Radioactive material" as prescribed in § 74.541(b), the car and any loose radioactive material must be isolated as far as possible from danger of human contact and no persons must be allowed to remain close to the car or contents needlessly until qualified persons are available to supervise handling. The shipper and the Bureau of Explosives should be notified immediately. Details involving the handling of radioactive materials in the event of a wreck may be found in Bureau of Explosives' Pamphlet No. 22 covering "Recommended Practice for Handling Collisions and Derailments involving Explosives, Gasoline and Other Dangerous Articles."

(1) Cars, buildings, areas, or equipment in which class D poisons have been spilled must not be again placed in service or occupied until decontaminated by qualified persons.

**§ 74.598 Inspection of cars at interchange.**

(a) Cars containing explosives requiring explosives placards (see § 74.525 (a)), which are offered by connecting lines must be carefully inspected by the receiving line on the outside, including the roof; and, if practicable, the lading must also be inspected. These cars must not be forwarded until all discovered violations have been corrected.

(b) If the car shows evidence of or if there is any reason to suspect that it has received rough treatment, the lading must be inspected and placed in proper condition before the car is permitted to proceed. When interchange occurs and inspection is necessary after daylight hours, electric flash lights should be provided. Naked lights must not be used.

(c) Shipments of explosives and other dangerous articles offered by connecting lines must comply with Parts 71–78 of this chapter, and the revenue waybill, freight bill, manifest of lading, card waybill, switching order, transfer slip ticket, or other billing, must bear label notation and placard indorsement prescribed by § 74.584.

(d) Cars containing packages of dangerous articles other than explosives should not be offered in interchange if packages are in leaking condition. If small leaks have developed in movement of tank cars to interchange, and where short movements are necessary to make delivery for unloading by consignee, and this movement may be safely made, the precaution prescribed by § 74.594, must be observed.

**§ 74.599 Handling by electric railways and motor cars.**

(a) Explosives, class A, as specified in §§ 73.53 to 73.87 of this chapter, must not be transported in any self-propelled car operated by electric or other motive power, if such car is carrying passengers.

(b) Dangerous articles other than explosives, and class B, and class C, explosives when transported in self-propelled motor cars, must be carried in a compartment of such cars in which there shall be no electrically operated apparatus, or electric circuits, other than circuits in conduits properly installed.

(c) When the motor car is used as a freight or baggage car and not as a passenger car, not more than 500 pounds net of explosives, or not exceeding 5,000 blasting caps or electric blasting caps, may be transported. The explosives must be placed in a "magazine" box made of sound lumber not less than 1 inch thick, covered on the exterior with metal, and provided with strong handles. This box must be plainly stenciled on the top, sides, and ends, in letters not less than 2 inches high, "EXPLOSIVES—DANGEROUS—HANDLE CAREFULLY". The box must be provided with strong hinges and with a lock for keeping it securely closed. Vacant space in the box must be filled with a cushioning material such as sawdust or excelsior, and the box must be properly stayed to prevent movement within the car.

(d) Explosives may be transported in a trailer or other closed car and must be securely blocked, braced and stayed so as to prevent movement during transit, and other freight must not be permitted to fall on or slide against such shipments.

(e) Trailer cars or other cars not occupied by a representative of the carrier must bear the standard placards as prescribed in this part.

(f) Explosives and other dangerous articles must not be loaded and transported together, except as permitted by the loading and storage chart, § 74.538.

(g) All the requirements of Parts 71 to 78 of this chapter as to packing, marking, labeling, description, certification and waybilling, must be complied with for all shipments of explosives or other dangerous articles transported by electric railways or other self-propelled motor car lines engaged in interstate or foreign commerce.

**§ 74.600 In case of a wreck.**

(a) Details involving the handling of explosives and other dangerous articles in the event of a wreck may be found in Bureau of Explosives Pamphlet No. 22 covering "Recommended practice for handling collisions and derailments involving explosives, gasoline and other dangerous articles".

(b) Whenever a car placarded "Explosives" is involved in an accident or wreck it must be opened and contents examined, and whenever opened for any purpose inspection must be made of the packages of explosives as soon as practicable without unnecessary disturbance of lading, to see that they are properly loaded and stayed and in good condition. Upon the discovery of leaking or broken packages they must be carefully removed to a safe place. Loose powder or other explosives must be swept up and carefully removed. If the floor is wet with nitroglycerin the car is unsafe to use, and a representative of the Bureau of

Explosives should be immediately called to superintend the thorough mopping and washing of the floor with a warm, saturated solution of concentrated lye or sodium carbonate. If necessary, the car must be placed on an isolated siding and proper notice given.

(c) Whenever a car placarded "Dangerous-Radioactive material" is involved in a wreck resulting in damage to any container of radioactive material, such container should be isolated as far as practicable from human contact. The shipper and the Bureau of Explosives must be notified immediately. Cars, building, equipment, or areas in which radioactive materials have been spilled must not be again placed in service or occupied until it has been determined that no dangerous contamination exists.

**§ 74.601 Calcium hypochlorite compounds, dry, involved in fires.**

(a) Calcium hypochlorite compounds, dry, packed in metal drums when involved in cars where fire has occurred from any cause must be held at least five days before forwarding. Drums showing evidence of spontaneous heating or stress from internal pressure must not be reshipped.

**§ 74.602 Placarded cars involved in fires.**

(a) Placarded cars which have been on fire due to hot journals or any other cause shall not be transported, except to the extent necessary to facilitate fire fighting, until it has been determined that there is no fire remaining within the car.

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## PART 75—CARRIERS BY RAIL EXPRESS

Sec.


75.650 Purpose of regulations in Parts 71–78 of this chapter.
75.651 Acceptable articles.
75.652 Application.
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75.654 Receipts.
75.655 Protection of packages.
75.656 Removal at destination.
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75.660 Violations and accidents or fires must be reported.

Subpart A—Transportation of Explosives by the Railway Express Agency, Incorporated, in Passenger or Express Train Service.

75.675 Explosives via Railway Express Agency, Inc.


AUTHORITY: The provisions of this Part 75 issued under 62 Stat. 738, 74 Stat. 808; 18 U.S.C. 834.

**§ 75.650 Purpose of regulations in Parts 71–78 of this chapter.**

(a) To promote the uniform enforcement of law and to minimizing the dangers to life and property incident to the transportation of explosives and other dangerous articles, by rail express carriers engaged in interstate or foreign commerce, Parts 71–78 of this chapter are prescribed to define these articles for rail express transportation purposes, and to state the precautions that must be observed by the carrier in handling them while in transit. It is the duty of each such carrier to make the prescribed regulations effective and to thoroughly instruct employees in relation thereto.

**§ 75.651 Acceptable articles.**

(a) Explosives and other dangerous articles, except such as will not be accepted, may be offered for transportation to rail express carriers engaged in interstate or foreign commerce and transported, provided they are in proper condition for transportation and are certified that the regulations in Parts 71–78 of this chapter have been complied with, and provided their method of manufacture, packing and storage, so far as they affect safe transportation, are open to inspection by a duly authorized representative of the initial carrier or of the Bureau of Explosives. Shipments of explosives or other dangerous articles not in proper condition for transportation, or loaded or stayed as required, or certified as to proper packing, marking and description as required in Parts 71–78 of this chapter must not be accepted for transportation or transported.

**§ 75.652 Application.**

(a) Parts 71–78 of this chapter apply to all shipments of explosives and other dangerous articles as defined in Part 73 of this chapter including carriers' material and supplies.

**§ 75.653 Labels.**

(a) Labels prescribed by the Commission's regulations, Part 73 of this chapter, must be applied to rail express shipments, unless exempt from Parts 71–78 of this chapter, and in addition the shipper must certify to compliance with the regulations by writing, stamping, or printing his name underneath the certificate printed thereon.

(b) Carriers must keep on hand an adequate supply of labels. Lost or detached labels must be replaced from information given on the waybill or from information on the package.

**§ 75.654 Receipts.**

(a) A receipt upon the form prescribed by the originating rail express carrier must be issued to the shipper for each express shipment of explosives or other dangerous articles accepted for transportation. Before a receipt is issued, the shipper must apply the label prescribed in Part 73 of this chapter to each package containing any article requiring a label under Parts 71–78 of this chapter.

(b) Each receipt must show the proper and definite name of commodity, as listed in § 72.5 of this chapter, and the color or kind of label applied to the package if any is required. Abbreviations must not be used.

**§ 75.655 Protection of packages.**

(a) In handling packages containing explosives or other dangerous articles, care must be taken to prevent them from falling or from being broken. They must not be thrown, dropped, or rolled. Packages bearing the marking "This Side Up" or "This End Up" as required by Part 73 of this chapter must be so handled and loaded.

(b) Packages protected by labels must be so loaded that they cannot fall to the car floor and in such manner that other freight cannot fall onto or slide against them.

(c) Unless sealed cars are equipped with a suitable guard or screen to prevent the lading coming in contact with hot steam pipes, or heat exits used in electrically-heated equipment, packages containing explosives or other dangerous articles must not be transported in them.

(d) Shipments of explosives or other dangerous articles, except poisons and nonflammable compressed gases, when transported in passenger carrying trains, should be loaded in the car occupied by an express employee or in connecting cars to which an express employee has access through end doors, and in a place that will permit their ready removal in case of fire. They must not be loaded in cars or stored in stations near steam pipes or other sources of heat. Explosives, flammable liquids (red label), and flammable compressed gases (red gas label) must not be loaded, transported, or stored in cars or stations equipped with lighted heaters or where open-flame lights or stoves or electric devices having exposed heating coils are used. No placards are required on such cars when occupied by an express employee. Shipments bearing poison label, when practicable, should be loaded in sealed cars; when loaded in cars occupied by messenger, care should be taken to prevent any contents sifting or leaking from containers.

(e) When an express or baggage car containing any package requiring a label prescribed by Part 73 of this chapter is not occupied by an express employee, or is not a connecting car to which an express employee has access through an end door, and the car is handled in a passenger, mixed, or freight train, the proper placards must be attached thereto as required by Part 74 of this chapter for the transportation of such articles by rail freight.

(f) Packages containing dangerous articles, as defined by Part 73 of this chapter, that are loaded in sealed cars for express movement from the point of origin, must be loaded in a place that will permit of their ready removal in case of fire, wreck, or unloading, and near the car door, if possible.

(g) Not to exceed 10 gas identification sets may be transported in any car at any time.

(h) It is important to prevent contact of contents of packages bearing either yellow or white corrosive liquid labels with combustible substances, such as sawdust, shavings, or sweepings, that may be present in express cars. The space should be swept or cleaned.

(i) Unless they are leaking, or in a manifestly insecure condition, packages of dangerous articles other than explosives in transit must be forwarded to destination and report made of any violation observed. Leaking packages must be reconditioned or repaired promptly and forwarded to destination.

(j) A container of radioactive material bearing red label must not be placed in cars, depots or other places closer than 3 feet to an area which may be continuously occupied by passengers, employees, or shipments of animals.

When more than one such container is present, the distance from occupied areas must be computed from the table in subparagraph (2) of this paragraph by adding the number of units shown on labels on the containers.

(1) In a combination car carrying passengers and/or express shipments, a container of radioactive material must not be placed closer than 3 feet to the dividing partition. For more than one such container the distance must be computed by method described in subparagraph (2) of this paragraph.

(2) A container of radioactive material, red label, must not be placed closer than 15 feet to any package containing undeveloped film. If more than one such container is present, the distance must be computed from the table in this subparagraph by adding the number of units shown on the labels on the packages.

TABLE

| Total number of units | Minimum distance in feet to nearest undeveloped film | Distance in feet to area that may be continuously occupied by passengers or employes | Distance in feet from dividing partition of a combination car |
|---|---|---|---|
| 1 to 10 | 15 | 3 | 3 |
| 11 to 20 | 20 | 4 | 4 |
| 21 to 30 | 25 | 5 | 5 |
| 31 to 40 | 30 | 6 | 6 |

NOTE 1: The distance in the table must be measured from the nearest point of the radioactive container or containers.

NOTE 2: 1 unit equals 1 milliroentgen per hour at 1 meter for hard gamma radiation or the amount of radiation which has the same effect on film as 1 mrhm. of hard gamma rays of radium filtered by ½ inch of lead.

(3) Not more than 40 units of radioactive material (red label) shall be transported in any car or stored in any location at one time.

(4) All containers of radioactive material (red label) must be carried by the handles when handles are provided.

(5) Radioactive materials (class D poisons) must not be loaded in the same car with samples of explosives.

(6) If for any reason, a package containing radioactive material (red label) would otherwise remain in the same building for a period longer than 24 hours, it must be moved to a different location after each 24 hours.

(7) In case of fire, wreck, breakage or unusual delay involving any shipment of radioactive material, the package or material should be segregated as far as possible from human contact. The shipper and the Bureau of Explosives should be immediately notified. In case of breakage of a package containing radioactive material and when it appears likely that the inside container may have been damaged, great care must be exercised to prevent contact with, inhalation, or any other means of the radioactive material entering the body. Cars, buildings, areas, or equipment in which class D poisons have been spilled must not be again placed in service or occupied until decontaminated by qualified persons.

NOTE 1: Except for subparagraph (7), the requirements of this paragraph shall not apply to magnesium-thorium alloy materials or uranium, depleted or normal, described in § 73.392 (e) and (f) of this chapter. The location of bundles, boxes, barrels, or crates of such material from packages of undeveloped film must be as stated on the label (see § 73.414(d) of this chapter).

**§ 75.656 Removal at destination.**

(a) Shipments of explosives and other dangerous articles as defined by Part 73 of this chapter which cannot be delivered within 48 hours after arrival at destination, Saturdays, Sundays, and holidays not included, or shipments which are refused by the consignee, must be promptly disposed of (1) by return to the shipper, if in proper shipping condition, or (2) by storage, provided a suitable storage place for such articles is available off the carrier's property, or (3) by sale, or (4) when necessary to safety, by destruction: *Provided*, That charged electric batteries may be held for 30 days after arrival at destination, pending delivery or disposition.

**§ 75.657 Waybills.**

(a) The waybill or delivery sheet when used as a waybill, or other billing issued in lieu thereof, and the transfer sheet, or interchange record used for transferring such shipments to a connecting carrier, must properly describe the articles by name as shown in § 72.5 of this chapter, and show color or kind of label applied. Abbreviations must not be used.

**§ 75.658 Connecting line shipments.**

(a) Shipments of dangerous articles offered by connecting express or other transportation lines must comply with Parts 71–78 of this chapter.

**§ 75.659 Astray shipments.**

(a) Any astray shipment of dangerous articles must be forwarded promptly to destination, if known, provided a careful inspection shows the package to be in proper condition for safe transportation. If the package is not labeled and the exact nature of the contents is unknown, the red label must be applied.

**§ 75.660 Violations and accidents or fires must be reported.**

(a) Violations and accidents or fires must be reported promptly by the express carrier to the Bureau of Explosives, 63 Vesey Street, New York 7, New York, as follows:

(1) Serious violations of Parts 71–78 of this chapter.

(2) Facts relating to leaking or broken containers.

(3) Accidents or fires in connection with the transportation or storage on express or railway property of explosives or other dangerous articles. (See § 74.588 of this chapter.)

## Subpart A—Transportation of Explosives by the Railway Express Agency, Incorporated, in Passenger or Express Train Service

**§ 75.675 Explosives via Railway Express Agency, Inc.**

(a) Except as provided in this section, shipments of explosives may be tendered for transportation by Railway Express Agency in passenger or express train service only when the Commission finds that an emergency requires such expedited movement. Emergency shipments shall be subject to regulations which the Commission deems advisable or necessary in the interest of the public in each emergency:

*Exception No. 1.* Samples of explosives for laboratory examination, fireworks, or other similar authorized explosives may continue to be transported in passenger or express train service, subject to the published regulations. (See §§ 72.5 and 73.86 (d) of this chapter.)

*Exception No. 2.* In time of war or of national emergency proclaimed by the President, shipments of explosives by, for or to the Armed Forces of the United States of America may be tendered for transportation in passenger or express train service when such shipments comply with the special regulations furnished to the Department of Defense, Railroads and the Railway Express Agency, Incorporated.

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## PART 76—RAIL CARRIERS IN BAGGAGE SERVICE

Sec.

76.700 Purpose of regulations in Parts 71–78 of this chapter.
76.701 Application.
76.702 Dangerous articles.
76.703 Acceptable articles.
76.704 Labels.
76.705 Placards.
76.706 Handling of packages.
76.707 Reporting violations and accidents or fires.

AUTHORITY: The provisions of this Part 76 issued under 62 Stat. 738, 74 Stat. 808; 18 U.S.C. 834.

**§ 76.700 Purpose of regulations in Parts 71–78 of this chapter.**

(a) To provide for the safe transportation of dangerous articles in rail baggage service on passenger-carrying trains of carriers engaged in interstate or foreign commerce, the following regulations are prescribed to define these articles for rail baggage transportation purposes, and to state the precautions that must be observed by the carrier in handling them while in transit.

**§ 76.701 Application.**

(a) Parts 71–78 of this chapter apply to all shipments in rail baggage service of dangerous articles as prescribed in this part. Shipments of explosives other than small arms ammunition, or any dangerous articles, except as provided in this part, must not be accepted for transportation in rail baggage service. The Commission will make provision as occasion and safety may require for dangerous articles other than those described in this part. Carriers engaged in interstate or foreign commerce must make the regulations in this part effective and must provide for the thorough instruction of their employees.

NOTE 1: Explosives or other dangerous articles, consisting of carrier's materials and supplies such as are acceptable for rail express transportation, may be transported in baggage cars when packed, marked, and labeled as prescribed by regulations for rail express shipments in Part 75 of this chapter.

**§ 76.702 Dangerous articles.**

(a) No dangerous article described by Parts 71–78 of this chapter shall be ac-

cepted for transportation or transported in rail baggage service except as provided for in § 76.703 and which must be packed, marked and labeled as required by Part 73 of this chapter.

§ 76.703 Acceptable articles.

(a) The following articles may be transported in rail baggage service under this part:

(b) Compressed gases:

| | | |
|---|---|---|
| Dichlorodifluoromethane | Green gas label | In cylinders not exceeding 12 x 51 inches, and with pressure not exceeding 300 pounds at 70° F. |
| Dichlorodifluoromethane-dichlorotetrafluoroethane mixture. | Green gas label | |
| Dichlorodifluoromethane-trichlorotrifluoroethane mixture | Green gas label | |
| Dichlorodifluoromethane-monochlorodifluoromethane mixture. | Green gas label | |
| Dichlorodifluoromethane - trichloromonofluoromethane - monochlorodifluoromethane mixture. | Green gas label | |
| Hydrogen | Red gas label | |
| Oxygen | Green gas label | |
| Anhydrous ammonia | Green gas label | In cylinders not exceeding 4½ by 22 inches. |
| Chlorine | Green gas label | |
| Ethylene | Red gas label | |
| Liquefied carbon dioxide | Green gas label | |
| Liquefied petroleum | Red gas label | |
| Methyl chloride | Red gas label | |
| Nitrous oxide | Green gas label | |
| Oxygen | Green gas label | |
| Sulfur dioxide | Green gas label | |

(1) Compressed gases must be shipped in metal cylinders complying with specifications and regulations as prescribed for freight shipments.

(c) Motion-picture films, yellow label. In containers as prescribed by paragraphs (e) to (g) of this section.

(d) Mine-rescue equipment. Cylinders of compressed gas for mine rescue or medical work may be shipped when packed with other equipment pertaining to such work; cylinders not over 4½ by 22 inches may be shipped when packed in traveling bags, suitcases, trunks, or other suitable outside containers. When so packed, the prescribed label must be placed on each outside container.

(e) Flammable motion-picture films must be packed in sparkproof metal cases or trunks complying with spec. 32A, 32B, or 32C (§§ 78.146, 78.147, or 78.148 of this chapter). Not more than 12,000 feet of standard width (1⅜ inches wide), 12 reels of approximately 1,000 feet each, or equivalent thereof, or more than 3 reels of stereoscopic film (2½ inches wide and approximately 1,500 feet each), may be packed in one such outside container; or as follows:

(1) In outside wooden boxes, spec. 15A, 15B, 15C, or 16A (§§ 78.168, 78.169, 78.170, or 78.185 of this chapter), provided each reel is placed in a tightly closed inside metal container. The gross weight of such a package must not exceed 80 pounds. Boxes must be equipped with handles, and covers securely fastened by metal hasp and staple with a strong lock or other efficient device.

(f) When slow-burning (nonflammable) motion-picture films are packed in the same outside containers with flammable motion-picture films, the outside packages must bear the yellow label, and the total contents of the outside container must not exceed the quantity or gross weight permitted for flammable films. (See paragraph (e) of this section.)

(g) Packages of motion-picture films with advertising matter attached to the outside container must not be offered or accepted for transportation. Shippers desiring to include advertising matter with their shipments of motion-picture films must place the advertising matter inside the outside box containing the films.

§ 76.704 Labels.

(a) All packages containing samples of explosives for laboratory examination, special fireworks and other dangerous articles for which labels are prescribed by Part 73 of this chapter, must be conspicuously labeled by the shipper. Labels should be applied when practicable to that part of the package bearing the consignee's name and address, or baggage check. The shipper must certify to compliance with Parts 71–78 of this chapter by writing, stamping, or printing his name underneath the certificate printed thereon. Shippers must furnish and attach labels prescribed for their shipments.

(b) Carriers must keep on hand an adequate supply of labels. Lost or detached labels must be replaced.

§ 76.705 Placards.

(a) Placards ordinarily used to indicate the presence in cars of flammable articles will not be required on baggage cars in charge of a railroad employee and moving in passenger trains, or on electric or gasoline motor cars in charge of an employee of the carrier, and which are run independently of cars carrying passengers. (See § 74.543 of this chapter for placarding of cars not occupied by carrier's employee.)

§ 76.706 Handling of packages.

(a) In handling packages containing dangerous articles, care must be taken to prevent them from falling or from being broken. They must not be thrown, dropped, or rolled.

(b) Packages containing dangerous articles when transported in baggage service in passenger-carrying trains must be loaded in the car occupied by a railway employee, and in a place that will permit their ready removal in case of fire. They must not be loaded in cars nor stored in stations near steam pipes or other sources of heat.

(c) The originating carrier, when a shipment is offered to it that is known to contain dangerous articles as defined by Parts 71–78 of this chapter, must see that the packages are marked and labeled as prescribed in Part 73 of this chapter.

(d) Shipments of dangerous articles offered by connecting transportation lines must comply with the regulations in Parts 71–78 of this chapter.

(e) An astray shipment of dangerous articles or a shipment made in violation of Parts 71–78 of this chapter without the knowledge of the carrier, must be forwarded promptly to destination, if known, provided a careful inspection shows the package to be in proper condition for safe transportation.

(f) Unauthorized persons must not be allowed to have access to dangerous articles in transit at any time while such articles are in the custody of the carrier.

§ 76.707 Reporting violations and accidents or fires.

(a) Serious violations of the regulations in Parts 71–78 of this chapter, facts relating to leaking or broken containers, and accidents or fires in connection with the transportation or storage on railway property of explosives or other dangerous articles, must be reported promptly by the rail carrier in baggage service to the Bureau of Explosives, 63 Vesey Street, New York 7, New York. (See § 74.588 of this chapter.)

## PART 77—SHIPMENTS MADE BY WAY OF COMMON, CONTRACT, OR PRIVATE CARRIERS BY PUBLIC HIGHWAY

Subpart A—General Information and Regulations


Sec.
77.800 Purpose of regulations in Parts 71–78 of this chapter.
77.801 Scope of regulations in Parts 71–78 of this chapter.
77.802 Application of regulations in Parts 71–78 of this chapter.
77.803 Import shipments by domestic carriers by motor vehicles.
77.804 Export shipments by domestic carriers by motor vehicle.
77.805 Canadian shipments.
77.806 United States Government shipments.
77.807 Improperly packed or damaged shipments in transportation.
77.808 Connecting carrier shipments.
77.809 Carrier's material and supplies.
77.810 Vehicular tunnels.
77.811 Astray shipments.
77.812 Containers required.
77.813 Inefficient containers.
77.814 Accidents to be reported.
77.815 Labels.
77.816 Marking on containers.
77.817 Shipping papers.
77.818 Receipts.
77.819 Certificate.
77.820 Waybills, manifests, etc.
77.821 Explosives or other dangerous articles forbidden or limited for transportation.
77.822 Acceptable articles.
77.823 Marking on motor vehicles and trailers.
77.824 Retesting of cargo tanks.


Subpart B—Loading and Unloading


77.834 General requirements.
77.835 Explosives.
77.836 Nonexplosive material.
77.837 Flammable liquids.
77.838 Flammable solids and oxidizing materials.
77.839 Corrosive liquids.
77.840 Compressed gases.
77.841 Poisons.

Subpart C—Loading and Storage Chart of Explosives and Other Dangerous Articles

Sec.
77.848 Loading and storage chart of explosives and other dangerous articles.

Subpart D—Vehicles and Shipments in Transit; Accidents

77.853 Transportation and delivery of shipments.
77.854 Disabled vehicles and broken or leaking packages; repairs.
77.855 Accidents; explosives.
77.856 Accidents; flammable liquids.
77.857 Accidents; flammable solids and oxidizing materials.
77.858 Accidents; corrosive liquids.
77.859 Accidents; compressed gases.
77.860 Accidents; poisons.

Subpart E—Regulations Applying to Explosives or Other Dangerous Articles on Motor Vehicles Carrying Passengers for Hire

77.870 Regulations for passenger carrying vehicles.

AUTHORITY: The provisions of this Part 77 issued under 62 Stat. 738, 74 Stat. 808; 18 U.S.C. 834.

[The regulations in Parts 71–78 of this chapter are applicable to every common and contract carrier by motor vehicle and every private carrier of property by motor vehicle subject to the regulatory provisions of Sections 831–835, 62 Stat. 738, 74 Stat. 808; 18 U.S.C. 831–835.

[Private carriers of property by motor vehicle subject to Parts 71–78 of this chapter are prohibited from transporting any explosive or other dangerous article unless the article is properly described by name in papers required by Parts 71–78 of this chapter to accompany every shipment of such article; and every such article must be packed and marked and in proper condition for transportation according to the regulations in Parts 71–78 of this chapter.]

NOTE 1: Because of the present emergency and until further order of the Commission, the following regulations shall apply to transportation of flammable liquids by private carriers of property in interstate or foreign commerce:

All regulations heretofore applying to common or contract carriers by motor vehicle shall apply to such private carriers, except:

Cargo tanks of tank motor vehicles constructed previous to June 15, 1943, may be continued in service if maintained in safe operating condition and sufficiently frequent inspections are maintained to determine compliance with all requirements as specified in this Note.

Any defect or deficiency, due to accident or otherwise, that is likely to cause serious hazard must be corrected before any such tank is continued in or returned to service; see, however, § 77.856

Requirements applying to tests of tanks, and provisions for markers thereon except that indicating the flammable nature of the cargo, are waived.

Outages for shipments shall be those provided for by Part 73 of this chapter, except that filling of tanks to outage markers already incorporated in tanks, having due regard for safety in the transportation of the flammable liquids, need not be changed.

Section 77.815, labels, and § 77.819, certification of packages, need not be complied with by such private carriers, except as to packages transferred from one carrier to another.

## Subpart A—General Information and Regulations

### § 77.800 Purpose of regulations in Parts 71–78 of this chapter.

(a) To promote the uniform enforcement of law and to minimize the dangers to life and property incident to the transportation of explosives and other dangerous articles, by common and contract carriers, by motor vehicle engaged in interstate or foreign commerce, the regulations in Parts 71–78 of this chapter are prescribed to define these articles for motor vehicle transportation purposes, and to state the precautions that must be observed by the carrier in handling them while in transit. It is the duty of each such carrier to make the prescribed regulations effective and to thoroughly instruct employees in relation thereto.

### § 77.801 Scope of regulations in Parts 71–78 of this chapter.

(a) Explosives and other dangerous articles, except such as may not be accepted and transported under Parts 71–78 of this chapter, may be accepted and transported by common and contract carriers by motor vehicle engaged in interstate or foreign commerce, provided they are in proper condition for transportation and are certified as being in compliance with Parts 71–78 of this chapter, and provided the method of manufacture, packing, and storage, so far as they affect safety in transportation, are open to inspection by a duly authorized representative of the initial carrier or of the Bureau of Explosives. Shipments of explosives or other dangerous articles not in proper condition for transportation, or loaded or stayed as required, or certified as to proper packing, marking and description as required in Parts 71–78 of this chapter, must not be accepted for transportation or transported.

### § 77.802 Application of regulations in Parts 71–78 of this chapter.

(a) Parts 71–78 of this chapter apply to all common and contract carriers by motor vehicle transporting explosives and/or other dangerous articles as defined by Interstate Commerce Commission "Regulations for Transportation of Explosives and Other Dangerous Articles by Land and Water in Rail Freight, Express and Baggage Services and by Motor Vehicle (Highway) and Water". When shipments are accepted by motor vehicle for further transportation by rail express (see also paragraph (c) of this section), rail baggage (see also paragraph (d) of this section), rail freight or by water on board vessel, they must, in addition to Parts 71–78 of this chapter, comply with the applicable regulations for the service by which they are to be transported.

(b) The regulations prescribed by the Commandant of the Coast Guard governing the transportation of "Explosives or Other Dangerous Articles on Board Vessels" also include combustible liquids and hazardous articles.

(c) The fifth column of the Commodity List, § 72.5 of this chapter, indicates the maximum quantity of an article that may be accepted for transportation by rail express or that the article is not acceptable for transportation by rail express.

(d) The mark ϕ preceding an article in the Commodity List, § 72.5 of this chapter, indicates that the article may be accepted for rail baggage transportation. All articles not so marked are not acceptable for rail baggage transportation.

### § 77.803 Import shipments by domestic carriers by motor vehicles.

(a) Import shipments of explosives and other dangerous articles offered in the United States in original packages for transportation by carriers by motor vehicle must comply with all requirements of Parts 71–78 of this chapter. Except for shipments from Canada conforming with § 73.8 of this chapter, the importer must furnish with the order to the foreign shipper, and also to the forwarding agent at the port of entry, full and complete information as to the packing, marking, labeling, and other requirements, as prescribed in Parts 71–78 of this chapter, and the forwarding agent must file with the initial carrier in the United States a properly certified shipping order or other shipping papers as prescribed in Parts 71–78 of this chapter.

(b) Import shipments transferred in port areas by motor vehicle: Except for the requirements of §§ 77.817 and 77.823, the provisions of Parts 71–78 of this chapter do not apply to such transportation by motor vehicle as may be necessary to effect transfer of import shipments from place of discharge to other places within the same port area or delivery to a water carrier within the same port area (including contiguous harbors). Further transportation of such import shipments by connecting water carrier shall be subject to the regulations prescribed by the Commandant of the Coast Guard.

### § 77.804 Export shipments by domestic carriers by motor vehicle.

(a) Explosives and other dangerous articles authorized to be exported from the United States when packed, marked, labeled, and described, in accordance with rules and regulations in force at destination ports, must not be offered to any common or contract carrier by motor vehicle for domestic transportation unless in full accordance with Parts 71–78 of this chapter.

(b) Export shipments transferred in port areas by motor vehicle: Except for the requirements of §§ 77.817 and 77.823, the provisions of Parts 71–78 of this chapter do not apply to such transportation by motor vehicle as may be necessary to effect transfer of export shipments from place of shipment to other places within the same port area or delivery to a water carrier within the same port area (including contiguous harbors). Further transportation of such export shipments by connecting water carrier shall be subject to the regulations prescribed by the Commandant of the Coast Guard.

### §77.805 Canadian shipments.

(a) Explosives or other dangerous articles which are packed, marked, labeled, and loaded, in conformity with the regulations of the Board of Transport Commissioners for Canada, may be accepted and carried by carriers from point of entry in the United States to their destination in the United States or through the United States en route to a point in Canada.

NOTE 1: Because of the present emergency and until further order of the Commission, compressed gas cylinders 40 inches in length and 8 inches in diameter, charged with not more than 40 pounds of carbon dioxide or when charged with nitrogen not in excess of 2,000 pounds per square inch, and shipped by or to the Canadian Department of National Defense in accordance with Board of Transport Commissioners for Canada Order No. 76258, dated March 10, 1951, may be shipped to destinations in the United States or through the United States to points in Canada.

**§ 77.806 United States Government shipments.**

(a) Shipments of explosives or other dangerous articles offered by or consigned to the Departments of the Army, Navy, and Air Force of the United States Government, must be packed, including limitations of weight in accordance with the regulations in Part 73 of this chapter or in containers of equal or greater strength and efficiency as required by their regulations.

(b) Shipments of radioactive materials, made by the Atomic Energy Commission, or under its direction or supervision, which are escorted by personnel specially designated by the Atomic Energy Commission, are exempt from the regulations in Parts 71–78 of this chapter.

**§ 77.807 Improperly packed or damaged shipments in transportation.**

(a) For the protection of the public against fire, explosion, or other, or further hazard, with respect to shipments of explosives or other dangerous articles offered for transportation or in transit by any common or contract carrier by motor vehicle, such carrier shall make immediate report to the Bureau of Explosives, 63 Vesey Street, New York 7, New York, for handling, any of the following emergency matters coming to their attention (see also §§ 77.853 to 77.870 for handling shipments in transit):

(1) Instances of packages of explosives or other dangerous articles discovered in transit not properly prepared for transportation in accordance with applicable regulations in Parts 71–78 of this chapter.

(2) Motor carrier accidents involving damage to container of explosives or other dangerous articles to such a degree as to necessitate repacking of the articles. (See § 74.588 of this chapter.)

(3) Other like emergencies in which any common or contract carrier by motor vehicle is or is likely to become involved, or may offer aid at its command.

(4) This section shall in no respect excuse either shipper or carrier by motor vehicle for failure to exercise due care to prevent any departure from any regulation prescribed in Parts 71–78 of this chapter.

**§ 77.808 Connecting carrier shipments.**

(a) Shipments of explosives or other dangerous articles offered by connecting transportation lines must comply with Parts 71–78 of this chapter.

**§ 77.809 Carrier's material and supplies.**

(a) The regulations in Parts 71–78 of this chapter apply to all shipments of explosives and other dangerous articles, including carrier's material and supplies.

**§ 77.810 Vehicular tunnels.**

(a) Nothing contained in Parts 71–78 of this chapter shall be so construed as to nullify or supersede regulations established and published under authority of State statute or municipal ordinance regarding the kind, character, or quantity of any explosive or other dangerous article permitted by such regulations to be transported through any urban vehicular tunnel used for mass transportation.

**§ 77.811 Astray shipments.**

(a) Any astray shipment of dangerous articles other than explosives must be forwarded promptly to destination, if known, provided a careful inspection shows the package to be in proper condition for safe transportation. If the package is not labeled and the exact nature of the contents is unknown, the red label must be applied.

**§ 77.812 Containers required.**

(a) Containers required for explosives and other dangerous articles are prescribed in Part 73 of this chapter, Regulations Applying to Shippers.

**§ 77.813 Inefficient containers.**

(a) The results of experience gained by examination of broken or leaking containers must be recorded by the Bureau of Explosives to the end that further use of any particular kind of container shown by experience to be inefficient, may be prohibited by the Commission.

**§ 77.814 Accidents to be reported.**

(a) Fires or explosions occurring in connection with the transportation, or storage on carrier's property, of explosives or other dangerous articles, and leaking, broken, or seriously damaged containers, must be reported promptly by the highway carrier to the Commission. These reports are required to the end that further use of containers shown by experience to be inefficient may be prohibited by the Commission:

No. 3666

Report to

BUREAU OF SAFETY AND SERVICE

INTERSTATE COMMERCE COMMISSION

WASHINGTON, D. C.

FIRES, EXPLOSIONS, AND LEAKING, BROKEN, OR SERIOUSLY DAMAGED CONTAINERS

[that can be attributed in whole or in part to the transportation or storage of explosives or other dangerous articles]

Submitted by _____
(Name of carrier—corporate or business name)

_____, 19____
(Date)

Address _____ _____
(Street and number) (City-town)

_____
(State)

Common carrier, I. C. C. certificate No. _____

Contract carrier, I. C. C. permit No. _____

Date of accident or discovery of damage _____

_____; place _____

Commodity and quantity _____;

quantity destroyed _____

What marking or placards were on motor vehicle? _____

If a tank motor vehicle, what sign or other marking to indicate contents? _____

Show package markings {
Name of contents _____; I. C. C. Spec. No. _____
Label _____
Serial Nos. _____; Code Nos. _____
If carboy, show box maker's name _____ and whether straight sided _____ or balloon shaped _____
}

Name and address of shipper _____

Name and address of consignee _____

T. L. or L. T. L. shipment _____

RESULTS OF ACCIDENT

[State whether in transportation or storage]

Number of persons injured ____; killed _____

Property loss:

| | |
|---|---|
| Reporting-carrier's vehicle | $_____ |
| Other vehicles | _____ |
| Reporting-carrier's cargo | _____ |
| Other cargoes | _____ |
| Other property (describe) | _____ |
| Total loss | _____ |

Give all essential facts and details of handling (use additional sheet if necessary), stating: (1) Part of package damaged or leaking, and what was done to stop leak, (2) rate of leakage, (3) probable cause of fire, explosion, or leaking, broken, or seriously damaged container, (4) distance between source of ignition and point of leakage of flammable liquid or vapor, (5) description of package, packing or cushioning material, and method of loading and bracing in vehicle, (6) for tank motor vehicle, speed of vehicle, condition of highway, degree and elevation of curve, if any, (7) any defective condition of vehicle likely to contribute directly to accident, and (8) specification number, type, or other identifying description of tank, and date built, if shown.

Is this accident also being reported to the Commission on Form BMC–50? _____
(Yes or no)

This report is required by § 77.814 of regulations in Docket 3666.

Information furnished on this form will not be open to public inspection.

(Signed) _____

**§ 77.815 Labels.**

(See § 73.405 to § 73.414 of this chapter for description of labels.)

(a) Labels prescribed by the Commission's regulations, Part 73 of this chapter, must have been applied to shipments, unless exempt from Parts 71–78 of this chapter, and in addition the shipper must have certified to compliance with the regulations by writing, stamping, or printing his name underneath the certificate printed thereon or on the shipping papers.

(b) Labels and marking name of contents are not required on truckload quantities of dangerous articles, except class A, class C, or class D poisons, when such shipments are unloaded by the consignee or his duly authorized agent from the motor vehicle in which originally loaded.

(1) Truckload shipments of chemical ammunition, explosive, containing poisonous gases, solids or liquids, class A, class B or class C, or poisons class A, class B, class C or class D offered for transportation by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government are exempt from labeling requirements when shipments are loaded or unloaded by the shipper or his duly authorized agent and such shipments are accompanied by qualified personnel supplied with equip-

ment to repair leaks or other container failure which will permit escape of contents.

(c) Except on class A, class C, or class D poisons, labels are not required on less-than-truckload shipments by motor vehicle by public highway when the articles are readily identifiable by reason of type of container or when the container is plainly marked to indicate its contents and;

(1) When the shipment is transported from origin to destination without transfer between vehicles and;

(2) When the shipper or its employes are in direct control or perform the loading, transporting and unloading.

(d) When it is known that subsequent shipments of these packages in less-than-truckload quantities will probably be made by the consignee, labels should be attached to the packages as would be required for less-than-truckload shipments.

(e) Carriers must keep on hand an adequate supply of labels. Lost or detached labels must be replaced from information given on waybill, manifest, memorandum, or other shipping paper.

(f) Samples will be furnished, on request, by the Bureau of Explosives, 63 Vesey Street, New York 7, New York.

(g) The carrier's name and stationery form number may be printed on the labels, in type not larger than 10 point, if placed within the red or black-line border and in the upper or lower corner of the diamond.

(h) Additional shipping information not inconsistent with Parts 71–78 of this chapter may be shown by the shipper on a container of dangerous articles other than explosives if so desired, but no label or marking may be of a design, or form, or size, as may be confused with the label or marking required by Part 73 of this chapter.

**§ 77.816 Marking on containers.**

(a) Each package of explosives or other dangerous articles must show the name and address of the consignee. Whenever the transportation of any explosive or other dangerous article is to be exclusively by motor vehicle between points between which the articles are not to be transferred from one motor carrier to another, in either truckload or less-than-truckload lots, the individual packages need not be marked with the consignee's name and address.

**§ 77.817 Shipping papers.**

(a) Every motor carrier operating a motor vehicle transporting explosives or other dangerous articles shall require the driver of the vehicle to have in his possession, and the driver shall keep in his possession during the course of such transportation, a manifest, memorandum receipt, bill of lading, shipping order, shipping paper, or other memorandum setting forth the following information for each class of such article being transported: The shipping name, the total quantity by weight, volume, or otherwise as appropriate of each kind of explosive or other dangerous article. and the prescribed label when required for the outside container of such article. For shipments of blasting caps or electric blasting caps the shipper must, in addition, show the number of caps in the shipment.

(1) Every carrier offering or delivering for rail transportation any loaded motor vehicle or any loaded motor vehicle trailer, semi-trailer, or container containing any shipment of an explosive or other dangerous article shall show on the shipping order, shipping paper, transfer sheet, or other billing issued in lieu thereof, in addition to the description of the vehicle or container, the proper and definite name of the commodity as shown in § 72.5 of this chapter and the color or kind of label or kind of placards applied.

**§ 77.818 Receipts.**

(a) A receipt upon the form prescribed by the originating express carrier must be issued to the shipper for each express shipment of explosives or other dangerous articles accepted for transportation. Before a receipt is issued, the shipper must apply the label prescribed in Part 73 of this chapter to each package containing any article requiring a label under Parts 71–78 of this chapter.

(b) Each receipt must show the proper and definite name of commodity, as listed in § 72.5 of this chapter, and the color or kind of label applied to the package if any is required. Abbreviations must not be used.

**§ 77.819 Certificate.**

(a) Except as provided in this section, no motor carrier may accept for transportation or transport any class A or class B explosives, blasting caps or electric blasting caps in any quantity, or any dangerous articles requiring label as prescribed by Part 73 of this chapter, unless it be certified to him by the shipper's name inserted in the certificate on the label or by the following certificate over the written or stamped facsimile signature of the shipper or his duly authorized agent in the lower left-hand corner of the manifest, memorandum receipt, bill of lading, shipping order, shipping paper, or other memorandum:

This is to certify that the above named articles are properly described, and are packed and marked and are in proper condition for transportation according to the regulations prescribed by the Interstate Commerce Commission.

(b) For the relief of shippers from multiplicity of certifications required for packages which may move by various means of transportation, shipments may be certified for rail, motor vehicle, water, or air transportation by adding to the certificate required on the shipping document "and the Commandant of the Coast Guard," or "and the Administrator of the Federal Aviation Agency," as the case may be.

**§ 77.820 Waybills, manifests, etc.**

(a) The waybill, manifest, dispatch, memorandum receipt, bill of lading, transfer sheet, or interchange record, when prepared for shipments and used for transferring such shipments to a connecting carrier, must properly describe the articles by name as shown in § 72.5 of this chapter, and show the color or kind of label applied. (See § 77.817.)

**§ 77.821 Explosives or other dangerous articles forbidden or limited for transportation.**

(a) *Nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate forbidden to common carriers.* Liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate, except as defined in § 73.53 (e) of this chapter, may not be accepted for transportation or be transported by any common carrier by motor vehicle.

(b) *Rejection of leaking containers of liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate.* Any individual container used for the transportation of liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate, or any boot used therewith, found in such a condition as to permit leakage, shall be discarded and shall not thereafter be repaired for further use.

(c) *Explosives or other dangerous articles forbidden or limited for transportation.* No motor carrier may accept for transportation or transport any explosive or other dangerous article listed in Commodity List (§ 72.5 of this chapter), as "forbidden" for transportation by all motor carriers; nor, if there be any prohibition or limitation regarding the transportation of any particular explosive or other dangerous article by a particular kind of motor carrier, may any such article be accepted for transportation or be transported by that kind of carrier, except as indicated in this part. (See § 77.870.)

(d) *Leaking or damaged packages of high explosive must not be accepted for transportation or transported.* Should any package of high explosive when offered for shipment show excessive dampness or be moldy or show outward signs of any oily stain or other indication that absorption of the liquid part of the explosive is not perfect, or that the amount of the liquid part is greater than the absorbent can carry, the package must be refused in every instance. The shipper must substantiate any claim that a stain is due to contact with material other than the liquid explosive ingredient of the explosive. In case of doubt the package must be rejected.

(e) *Condemned or leaking dynamite; repacking.* Condemned or leaking dynamite must not be repacked and offered for shipment unless the repacking is done by a competent person in the presence of or with the written consent of an inspector, or with the written authority of the chief inspector, of the Bureau of Explosives.

(f) Smokeless powder for small arms in quantities not exceeding 100 pounds net weight in one motor vehicle shall be classed as a flammable solid for purposes of transportation when approved for such classification by the Bureau of Explosives. Maximum quantity in any inside container must not exceed eight pounds and inside containers must be arranged and protected so as to prevent simultaneous ignition of the contents. The complete package must be a type approved by the Bureau of Explosives. Each outside shipping con-

tainer shall be labeled as prescribed in § 73.402(a)(2) of this chapter.

**§ 77.822 Acceptable articles.**

(a) Any motor carrier may accept for transportation or transport any acceptable explosive or other dangerous articles listed in the Commodity List, § 72.5 of this chapter: *Provided, however,* That no provision of this section shall be so construed as to permit the acceptance or transportation of liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate, other than as defined in § 73.53 (e) of this chapter, by any common carrier.

(b) *Liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate.* Liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate, other than as defined in § 73.53 (e) of this chapter, may be transported only by motor carriers other than common carriers in containers complying with specification MC200 (§ 78.315 of this chapter). No form of trailer may be attached.

**§ 77.823 Marking on motor vehicles and trailers.**

(a) Every motor vehicle, other than tank motor vehicles, transporting any quantity of explosives, class A; poison gas, class A; or radioactive material, poison class D requiring red radioactive materials label except label described in § 73.414(d) of this chapter for which placards are not required; and every motor vehicle transporting 2,500 pounds gross weight or more of explosives, class B, flammable liquids, flammable solids or oxidizing materials, corrosive liquids, compressed gas, class B poisons, and tear gas, or 5,000 pounds gross weight or more of two or more articles of these groups shall be marked or placarded on each side and rear with a placard or lettering in letters not less than 3 inches high on a contrasting background as follows:

| | |
|---|---|
| (1) Explosives, class A | EXPLOSIVES |
| (2) Explosives, class B | DANGEROUS |
| (3) Flammable liquid | DANGEROUS |
| (4) Flammable solid | DANGEROUS |
| (5) Oxidizing material | DANGEROUS |
| (6) Corrosive liquid | DANGEROUS |
| (7) Compressed gas | COMPRESSED GAS |
| (8) Poison gas, class A | POISON GAS |
| (9) Tear gas | DANGEROUS |
| (10) Poisons, class B | DANGEROUS |
| (11) Dangerous, class D poison | DANGEROUS—RADIOACTIVE MATERIAL |

(b) *Tank motor vehicles.* Every tank motor vehicle used for the transportation of any flammable liquid or flammable solid, regardless of the quantity being transported, or whether loaded or empty, shall be conspicuously and legibly marked on each side and the rear thereof, in letters at least 3 inches high on a background of sharply contrasting color, optionally, as follows:

(1) With a sign or lettering on the motor vehicle, with the word "FLAMMABLE".

(2) With the common name of the flammable liquid or flammable solid being transported.

(3) With the name of the carrier or his trade-mark, when and only when such name or mark plainly indicates the flammable nature of the cargo.

(c) *Tank motor vehicles.* Every tank motor vehicle used for the transportation of any corrosive liquid, regardless of the quantity being transported, or whether loaded or empty, shall be conspicuously and legibly marked on each side and the rear thereof, in letters at least 3 inches high on a background of sharply contrasting color, optionally, as follows:

(1) The common name of the corrosive liquid being transported.

(2) A sign or lettering on the motor vehicle, with the word "ACID", or, when transporting corrosive liquids other than acids, the words "CORROSIVE LIQUID".

(d) *Tank motor vehicles.* Every tank motor vehicle used for the transportation of any compressed gas, regardless of the quantity being transported, or whether loaded or empty, shall be conspicuously and legibly marked on each side and the rear thereof on a background of sharply contrasting color with a sign or lettering on the tank or motor vehicle with the words "COMPRESSED GAS," "FLAMMABLE COMPRESSED GAS," or "FLAMMABLE GAS," as appropriate in letters at least 6 inches high; and in letters at least 2 inches high with a commonly accepted name of the contents, such as "ANHYDROUS AMMONIA," "CARBON DIOXIDE," "CHLORINE," "NITROUS OXIDE," "SULFUR DIOXIDE," "LIQUEFIED PETROLEUM GAS," "PROPANE," or "BUTANE."

(1) Every cargo tank shall be marked with the name of the motor carrier who owns the vehicle of which such tank forms a part; or, if the operator of the vehicle is not the owner, the name of the owner thereof.

(2) In addition to the markings hereinbefore required, there may be marked on any cargo tank the trademark appropriate to the commodity being transported therein; *Provided, however,* That no such marking shall be of such size and character as to render inconspicuous the required markings.

(3) No markings either required or permitted under the terms of this paragraph shall be in lieu of any other marking or markings required by the Commission.

(e) *Tank motor vehicles.* Every tank motor vehicle used for the transportation of any less dangerous poison, class B, regardless of the quantity being transported, or whether loaded or empty, shall be conspicuously and legibly marked on each side and the rear thereof, in letters at least 3 inches high, on a background of a sharply contrasting color, optionally, as follows:

(1) With a sign or lettering on the motor vehicle with the word "POISON".

(2) With the common name of the Class B poison being transported.

(f) *Removal of signs or lettering.* Every sign or lettering required by paragraph (a) of this section shall be removed from or covered on any motor vehicle to which it is attached or affixed when such motor vehicle is not transporting the article for which the sign is appropriate, except that no such sign or lettering is required to be removed or covered when such motor vehicle is used exclusively in the transportation of any article for which the sign or lettering is appropriate.

(g) *Only one marking required.* Whenever any motor vehicle is transporting more than one class of dangerous article for which signs or placards are required to be lettered on or affixed to any such motor vehicle, no more than one kind of sign, lettering, or placard need be displayed. The sign, lettering, or placard used shall be the one which, in the judgment of the motor carrier, designates the most dangerous article being transported.

**§ 77.824 Retesting of cargo tanks.**

(a) *Flammable liquid and poisonous liquid cargo tanks, specs. MC 300, MC 301, MC 302, MC 303, and MC 305.* Every cargo tank constructed in compliance with specs. MC 300, MC 301, MC 302, MC 303, and MC 305 (§§ 78.321, 78.323, 78.324, and 78.326 of this chapter) used for the transportation of any flammable liquid or poisonous liquid, class B, shall be retested as follows:

(1) *Tank out of service one year or more.* Every cargo tank which has been out of transportation service for a period of one year or more shall not be returned again to or placed in such service until it has successfully fulfilled the testing requirements set forth in the applicable specification.

(2) *Specification tanks.* Every cargo tank complying with the requirements of Specification No. 1001, 1937 Edition of the American Petroleum Institute, specifications of the National Fire Protection Association 1929 or 1933, or specifications MC 300, MC 301, MC 302, MC 303, and MC 305 (§§ 78.321, 78.323, 78.324, and 78.326 of this chapter), shall be tested at least once in every 5-year period and shall not be returned to service until it has successfully fulfilled the testing requirements set forth under § 78.321–16 of this chapter. If tested no oftener than once in every 5 years, at least one such test shall be made in the last year of any such 5-year period. The time of reckoning for such testing of such cargo tanks shall be from the time of the last test made in accordance with the requirements set forth under § 78.321–16 of this chapter.

(3) *Nonspecification tanks.* Every cargo tank not complying with the requirements of Specification No. 1001, 1937 Edition of the American Petroleum Institute, specifications of the National Fire Protection Association 1929 or 1933, or specifications MC 300, MC 301, MC 302, MC 303, and MC 305 (§§ 78.321, 78.323, 78.324, and 78.326 of this chapter), shall be tested at least once in every calendar year and shall successfully fulfill the requirements set forth under § 78.321–16 of this chapter. No two such required tests shall be closer together than 6 months.

(b) *Pressurized flammable liquid and poisonous liquid cargo tanks, spec. MC 304.* Every cargo tank constructed in compliance with spec. MC 304 (§ 78.325 of this chapter) or footnote 1 of § 78.325 of this chapter, shall be retested as specified in § 78.325–16 of this chapter. Each cargo tank used for the transportation of commodities specified in § 78.325 of this chapter shall be withheld from service until it has successfully fulfilled the testing requirements. Each such cargo tank shall be retested as follows:

(1) Whenever any such cargo tank, new or old, is acquired by a motor car-

rier; except that suitable testing of new tanks when completed by the manufacturer and before such tanks are placed in service will be considered as complying with this requirement.

(2) When such cargo tank has been out of service for one year or longer.

(3) When or before the test date required by § 78.325–17 of this chapter to be painted on the tank is five years old.

(4) When or before the test date required by § 78.325–17 of this chapter to be painted on the tank is two years old, in the case of tanks not complying with all requirements of this specification but continuing in service as authorized in footnote 1 of § 78.325 of this chapter.

(c) *Corrosive liquid cargo tanks, specs. MC 310 and MC 311.* Every cargo tank constructed in compliance with specs. MC 310 and MC 311 (§§ 78.330 and 78.331 of this chapter) used for the transportation of any corrosive liquid shall be retested as follows:

(1) *Tank out of service one year or more.* Every cargo tank which has been out of transportation service for a period of one year or more shall not be returned again, to or placed in such service until it has successfully fulfilled the testing requirements set forth in the applicable specification.

(2) *Specification tanks.* Every cargo tank complying with specs. MC 310, MC 311 (§ 78.330 or 78.331 of this chapter), or the requirements set forth in footnote 1 of § 78.330 or 78.331 of this chapter, shall be tested at least once in every 5-year period and shall successfully fulfill the testing requirements set forth in the applicable specification. If tested no oftener than once every 5 years, at least one such test shall be made in the last year of any such 5-year period. The time of reckoning of such testing of such cargo tanks shall be from the time of the last test made in accordance with the testing requirements set forth in the applicable specification.

(3) *Nonspecification tanks.* Every cargo tank not complying with specs. MC 310, MC 311 (§ 78.330 or 78.331 of this chapter), or the requirements set forth in footnote 1 of § 78.330 or 78.331 of this chapter, shall be tested at least once in every calendar year and shall successfully fulfill the testing requirements set forth under § 78.330–16 or 78.331–16 of this chapter, whichever is applicable. No two such required tests shall be closer together than 6 months.

(d) *Compressed gas cargo tanks, spec. MC–330.* Every cargo tank constructed in compliance with spec. MC–330 (§ 78.336 of this chapter) used for the transportation of any compressed gas shall be retested in accordance with the following provisions:

(1) Not later than January 31, 1965, an external and internal visual inspection shall be made to determine whether the tank is in compliance with the requirements of the regulations, specifications, and provisions of the code under which it was built, provided that an external inspection of shell and heads shall not be required on insulated tanks and internal inspection shall not be required in tanks without manways or as to tanks constructed of other than quenched and tempered steel which have a water capacity of 3,000 gallons or less. Particular determination shall be made as follows:

(i) Whether excessive weld metal build-up, above that permitted by the code provisions, or other indication of improper welding during fabrication exists.

(ii) Whether evidence of a crack or cracks, or other damage exists.

(iii) Whether openings in the tank are grouped as required by § 78.336–1(c) of this chapter.

(iv) Whether valves, fittings, accessories, safety relief devices, and gauging devices are adequately protected against mechanical damage as required by § 78.336–10 of this chapter.

(v) Whether marking and placarding are legible and meet the size requirements of § 77.823(d).

(vi) Whether the automatic excess flow valve required by § 73.33(o) of this chapter conforms to all requirements of that section, particularly that the capacity of all connections and lines is greater than the rated flow of the excess flow valve.

(vii) Whether the manually operated shut-off valve, required by § 73.33(o)(3) of this chapter, is operative and in conformity with the regulation.

(viii) Whether pipes, fittings, valves, valve connections, or nozzles extend to or beyond a point at which they are protected from mechanical damage.

(2) If any inspection discloses any failure to comply with requirements of the code under which the tank was built or with any other provision of Commission regulations, or if evidence of any substantial or significant damage is found, repairs, or modifications shall be made to bring the tank into compliance with such code provisions or regulations before it is returned to service.

(3) (i) At time intervals specified herein tests shall be made of all welds in or on tank shells and heads, both inside and outside, of tanks of more than 3,000 water gallon capacity, if constructed of quenched and tempered steel, and if used for transportation of toxic or flammable gases, provided that welded appurtenances need not be removed for this purpose, and provided that any tank, if insulated, need not be subjected to exterior testing and that any tank not equipped with a manway need not be subjected to internal testing. At least ten percent of the tanks in use by a carrier shall be tested not later than September 30, 1964. The test shall be made of every tank not later than the first occasion when it is due for the test required by § 73.33(k). Tanks constructed prior to January 1, 1959, shall be tested at first priority, with oldest tanks to be tested first. Any tank tested in accordance with these requirements subsequent to December 31, 1962, shall be deemed to have complied with the requirement of this subparagraph. Similar tests of not less than ten percent of the tanks in use by a carrier shall be made during each period of six months after September 30, 1964, until all tanks in service have been tested. If any carrier has less than ten such tanks, at least one such tank shall be tested during each period of six months.

(ii) The test required by this subparagraph shall be made either by the magnetic particle method, the radiographic method, or by the ultrasonic method. If the magnetic particle method is used, the test shall be conducted in accordance with appendix VI, section VIII, 1962 edition of the ASME Code, except that permanent magnets may not be used for this purpose. The ultrasonic method may be used only in full compliance with the provisions of Case Interpretation 1275N of the ASME Code. If the radiographic method is used, the test shall be conducted in accordance with the requirements of section VIII, 1962 edition of the ASME Code. If any failure to comply with the provisions of the code, or any defective plate or weldment, is disclosed by such test it shall be repaired prior to replacing the vehicle in service.

(4) Reports required:

(i) Each motor carrier, whether common, contract, or private, operating such tank vehicles, shall make a written report in triplicate, concerning all tanks inspected or tested in accordance with subparagraphs (1), (2), and (3) of this paragraph. Such reports shall be filed, in duplicate, with the District Director of the Bureau of Motor Carriers, having jurisdiction at the place of the principal office of the carrier not later than 15 days after September 30, 1964, as to those tanks which have been inspected or tested on or before September 30, 1964. Such report shall indicate the number of tanks remaining to be inspected in accordance with subparagraph (1), of this paragraph, if any. A similar report shall be filed not later than 15 days after completion of the inspections and repairs of all tanks in service required to be inspected and repaired in accordance with subparagraphs (1) and (2) of this paragraph. Similar reports shall be made not later than 15 days after completion of each six months' period succeeding September 30, 1964, until all such tanks have been inspected, tested, and repaired as required. If by September 30, 1964, or at the end of any succeeding period of six months, all tanks in use by a carrier, including any tanks acquired or placed in service during such periods, shall have been inspected or tested, that fact shall be reported and no further report is required unless and until additional vehicles are placed in the carrier's service. A copy of the report shall be retained by the carrier during the period the tank is in the carrier's service and for one year thereafter.

(ii) Each carrier shall cause to be prepared a record, signed by the inspector, of the inspection of each tank required by subparagraphs (1) and (2) of this paragraph. The signed inspection record shall be retained with the carrier's file copy of the report filed with the Commission. The report shall state the identification, by company designation number, of each vehicle inspected, the name of the inspecting agency and person, the nature of any defects or damage discovered, and shall state how such defect or damage was corrected and by what method. If no defect or damage was discovered, that fact shall be reported.

(iii) Each carrier shall cause to be furnished to it a record of the test of each tank required by subparagraph (3) of this paragraph, signed by the representative of the firm or agency making the test, or signed by the employee of the carrier making the test, which report shall be retained with the carrier's file copy of the report filed with the Commission. The report shall state the identification, by company designation number, of each vehicle tested during the period covered. The report shall state what method of test was used, the name of the inspecting agency and person, the nature of any defects or damage discovered, and how such defect or damage was corrected. If no defect or damage was discovered, that fact shall be reported. Any vehicle involved in an accident resulting in damage to the cargo tank, shall be tested and reported upon in accordance with the requirements of this subdivision and subparagraph (3) of this paragraph.

(iv) The reports required of a carrier by subdivisions (i), (ii), and (iii) of this subparagraph may be combined in a single report.

(5) The inspection and test required shall be in addition to the testing requirements of § 73.33 of this chapter.

(e) *Novel cargo tanks.* Every cargo tank which shall have been authorized by the Commission under the provisions of § 73.33 (h) and (j) of this chapter shall be retested under the requirements set forth in the terms of such authorization.

(f) *Testing following accidents.* Every cargo tank capable of suitable repair following any accident in which a tank motor vehicle may have been involved shall not be returned to service until it has successfully been retested in accordance with the test prescribed for its periodic retest if the cargo tank has itself been damaged in a manner likely to affect the safety of operation of the tank motor vehicle, or if the damage to the tank motor vehicle is such as to make the safety of the cargo tank uncertain.

(g) *Special testing required by the Commission.* Upon the showing of probable cause of the necessity for retest, the Commission may, at its discretion, cause any cargo tank to be retested at any time in accordance with the requirements prescribed for its periodic retest.

(h) *Test date markings.* The date of the last test shall be painted on the tank in letters not less than 1¼ inches high, in legible colors, immediately below the metal identification plate specified in the applicable specification.

## Subpart B—Loading and Unloading

NOTE: For prohibited loading and storage of explosives and other dangerous articles, see § 77.848.

### § 77.834 General requirements.

(a) *Containers secured in vehicle.* Any tank, barrel, drum, or cylinder, not designed to be permanently attached to a motor vehicle, containing any flammable liquid, compressed gas, corrosive liquid, or poisonous article, shall be reasonably secured against movement within the motor vehicle by which it is being transported.

(b) *No explosives or other dangerous articles on pole trailers.* No explosive or other dangerous article may be loaded into or on or transported in or on any pole trailer.

(c) *No smoking while loading or unloading.* Smoking on or about any motor vehicle while loading or unloading any explosive, flammable liquid, flammable solid, oxidizing material, or flammable compressed gas is forbidden.

(d) *Keep fire away, loading and unloading.* Extreme care shall be taken in the loading or unloading of any explosive, flammable liquid, flammable solid, oxidizing material, or flammable compressed gas into or from any motor vehicle to keep fire away and to prevent persons in the vicinity from smoking, lighting matches, or carrying any flame or lighted cigar, pipe, or cigarette.

(e) *Handbrake set while loading and unloading.* No explosive or other dangerous article shall be loaded into or on, or unloaded from, any motor vehicle unless the handbrake be securely set and all other reasonable precautions be taken to prevent motion of the motor vehicle during such loading or unloading process.

(f) *Use of tools, loading and unloading.* No tools which are likely to damage the effectiveness of the closure of any package or other container, or likely adversely to affect such package or container, shall be used for the loading or unloading of any explosive or other dangerous article.

(g) *Prevent relative motion between containers.* Containers of explosives, flammable liquids, flammable solids, oxidizing materials, corrosive liquids, acids, compressed gases, and poisonous liquids or gases, must be so braced as to prevent motion thereof relative to the vehicle while in transit. Containers having valves or other fittings must be so loaded that there will be the minimum likelihood of damage thereto during transportation.

(h) *Precautions concerning containers in transit; fueling road units.* Reasonable care should be taken to prevent undue rise in temperature of containers and their contents during transit. There must be no tampering with such container or the contents thereof nor any discharge of the contents of any container between point of origin and point of billed destination. Discharge of contents of any container, other than a cargo tank, must not be made prior to removal from the motor vehicle. Nothing contained in this paragraph shall be so construed as to prohibit the fueling of machinery or vehicles used in road construction or maintenance.

(i) *Tank motor vehicles attended, loading and unloading.* Under no circumstances shall a tank motor vehicle be left unattended during the loading or unloading process. For the purpose of this part, the delivery hose, when attached to the motor vehicle, shall be deemed a part thereof.

(j) *Prohibited loading combinations.* In any single driven motor vehicle or in any single unit of a combination of motor vehicles, explosives and other dangerous articles shall not be loaded together if prohibited by loading and storage chart, § 77.848. This section shall not be so construed as to forbid the carrying of materials essential to safe operation of motor vehicles. (See Motor Carrier Safety Regulations, Part 193 of this chapter.)

(k) *Access to mixed ladings.* Flammable solids, oxidizing materials, or corrosive liquids, when transported on a motor vehicle with other lading not otherwise forbidden, shall be so loaded as to provide ready access thereto for shifting or removal.

(l) *Truck bodies or trailers equipped with heaters or automatic refrigeration apparatus.* Except as provided in subparagraph (1) of this paragraph flammable liquids (red label) and flammable gases (red label) must not be loaded in truck bodies or trailers equipped with heaters or automatic refrigerating apparatus unless the automatic apparatus be rendered inoperative. The fuel tanks for such apparatus shall be empty or removed from the vehicle, except that liquefied petroleum gas fuel tanks exterior to the vehicle body may have their valves closed and disconnected from the fuel feed lines in lieu of being emptied or removed.

(1) This prohibition does not apply, and heating or refrigeration apparatus may be operated on motor vehicles loaded with flammable liquids and flammable gases, when the lading space is equipped with no electrical apparatus other than of nonsparking or explosion-proof types, no combustion apparatus in the lading space, and no connection for return of air from the lading space to any combustion apparatus. The heating system must be such that no part of the lading is heated over 130° F., and conform to § 193.77 of this chapter.

### § 77.835 Explosives.

(See also § 77.834 (a) to (k).)

(a) *Engine stopped.* No explosives shall be loaded into or on or be unloaded from any motor vehicle with the engine running.

(b) *Care in loading, unloading, or other handling of explosives.* No bale hooks or other metal tools shall be used for the loading, unloading, or other handling of explosives, nor shall any package or other container of explosives, except barrels or kegs, be rolled. No packages of explosives shall be thrown or dropped during process of loading or unloading or handling of explosives. Special care shall be exercised to the end that packages or other containers containing explosives shall not catch fire from sparks or hot gases from the exhaust tailpipe.

(1) Whenever tarpaulins are used for covering explosives, they shall be secured by means of rope or wire tie downs. Explosives placards or markings required by § 77.823 shall be secured, in the appropriate locations, directly to the equipment transporting the explosives. If the vehicle is provided with placard boards, the placards must be applied to these boards.

(c) *Explosives transported on vehicles or combination of vehicles.* Class A explosives may not be loaded into or transported in any vehicle of a combination of vehicles except as follows: In a truck and in one semitrailer or one full trailer at-

tached thereto, with no other trailer included in the combination, in a semitrailer attached to a truck-tractor and in a full trailer attached thereto, with not more than one semitrailer and one full trailer in the combination. As used in this paragraph a full trailer includes a semitrailer equipped with a front axle dolly.

(1) Each full trailer used in any of the above combinations, in any vehicle of which combination any class A explosive is transported, must have a wheel base of at least 184 inches. No class A explosive may be loaded into or transported on any vehicle in any combination of vehicles if any vehicle in the same combination contains any explosive or other dangerous article which may not be loaded or stored with explosives class A under the provisions of § 77.848.

(d) [Reserved]

(e) *No sharp projections inside body of vehicles.* No motor vehicle transporting any kind of explosive shall have on the interior of the body in which the explosives are contained, any inwardly projecting bolts, screws, nails, or other inwardly projecting parts likely to produce damage to any package or container of explosives during the loading or unloading process or in transit.

(1) All fuel tanks for heaters or refrigerating machinery with which truck bodies or trailers are equipped shall be drained and all automatic heating or refrigerating machinery shall be rendered inoperative by disconnection of the automatic controls or the source of power for their operation.

(f) *Explosives vehicles, floors tight and lined.* Motor vehicles transporting class A or class B explosives shall have tight floors; shall have that portion of the interior in contact with the load lined with either non-metallic material or non-ferrous metals, except that the lining is not required for truck load shipments loaded by the Departments of the Army, Navy or Air Force of the United States Government provided the explosives are of such nature that they are not liable to leakage of dust, powder, or vapor which might become the cause of an explosion. The interior of the cargo space must be in good condition so that there will not be any likelihood of containers being damaged by exposed bolts, nuts, broken side panels or floor boards, or any similar projections.

(g) *Blasting caps, blasting caps with safety fuse, blasting caps with metal clad mild detonating fuse and/or electric blasting caps in same vehicle with other explosives.* Blasting caps, blasting caps with safety fuse, blasting caps with metal clad mild detonating fuse and/or electric blasting caps, without limitation as to quantity except as limited in paragraph (m) of this section, may be transported in the same motor vehicle with high explosives (dynamites and similar explosives) when the net weight of the high explosives (dynamites and similar explosives) does not exceed 5,000 pounds, as follows: The blasting caps, blasting caps with safety fuse, blasting caps with metal clad mild detonating fuse and electric blasting caps must be packed in authorized I.C.C. specification outside shipping containers, or in prescribed inside I.C.C. packages in an outside box made of 1 inch lumber lined with suitable padding material not less than ½ inch thick or a box made of not less than 12 gauge sheet metal lined with plywood or other suitable material not less than ⅜ inch thick so that no metal is exposed. Hinged cover and fastening device are required on boxes. These boxes must be loaded in motor vehicle so that contents or box will be immediately accessible for removal and so that other containers in the motor vehicle will not fall on them or otherwise damage them during transit. Blasting caps, blasting caps with safety fuse, blasting caps with metal clad mild detonating fuse or electric blasting caps when not packed in containers referred to above in this paragraph must be transported in containers as prescribed in spec. MC 201 (§ 78.318 of this chapter). See paragraph (m) of this section for shipment of blasting caps with liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate. Explosive projectiles with detonating fuzes assembled in place must not be transported unless shipped by, for, or to the Departments of the Army, Navy, and Air Force of the United States Government, or unless of a type approved by the Bureau of Explosives.

(h) *Lading within body or covered, tailgate closed.* Except as provided in paragraphs (g), (k), and (m) of this section, dealing with the transportation of liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate, other than as defined in § 73.53 (e) of this chapter, all of that portion of the lading of any motor vehicle which consists of explosives shall be contained entirely within the body of the motor vehicle or within the horizontal outline thereof, without overhang or projection of any part of the load, and if such motor vehicle has a tailboard or tailgate, it shall be closed and secured in place during such transportation. Every motor vehicle transporting explosives must either have a closed body or have the body thereof covered with a tarpaulin, and in either event care must be taken to protect the load from moisture and sparks, except that subject to other provisions of these regulations, explosives other than black powder may be transported on flat-bed vehicles if the explosive portion of the load on each vehicle is packed in fire and water resistant containers or covered with a fire and water resistant tarpaulin.

(i) *Explosives to be protected against damage by other lading.* No motor vehicle transporting any explosive may transport as a part of its load any metal or other articles or materials likely to damage such explosive or any package in which it is contained, unless the different parts of such load be so segregated or secured in place in or on the motor vehicle and separated by bulkheads or other suitable means as to prevent such damage.

(j) *Transfer of explosives en route.* No class A or class B explosive shall be transferred from one container to another, or from one motor vehicle to another vehicle, or from another vehicle to a motor vehicle, on any public highway, street, or road, except in case of emergency. In such cases red electric lanterns, red emergency reflectors or red flags shall be set out in the manner prescribed for disabled or stopped motor vehicles. (See Motor Carrier Safety Regulations, Part 192 of this chapter.) In any event, all practicable means, in addition to these hereinbefore prescribed, shall be taken to protect and warn other users of the highway against the hazard involved in any such transfer or against the hazard occasioned by the emergency making such transfer necessary.

(k) *Loading requirements for liquid nitroglycerin, desensitized liquid nitroglycerin, or diethylene glycol dinitrate.* Liquid nitroglycerin, desensitized liquid nitroglycerin, or diethylene glycol dinitrate, other than as defined in § 73.53 (e) of this chapter, may be accepted for transportation and transported only by motor carriers other than common carriers if it be loaded into or on a truck having the type of body specified in spec. MC200 (§ 78.315 of this chapter). No liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate may be loaded directly above any other explosive, or in any quantity in excess of 900 quarts on one motor vehicle or 10 quarts in any one individual container. Additional quantities of explosives, other than nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate, excepting any type of blasting or percussion cap or other detonating device, may be carried on such motor vehicle in a closed or covered bed or body which shall be firmly bolted or fastened above the lid of the compartment containing the nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate. In no case shall the net load be more than 7,500 pounds. (See paragraph (m) of this section and spec. MC201 (§ 78.318 of this chapter).)

(l) *Separation of tools and supplies for preparing charges.* Motor vehicles transporting liquid nitroglycerin; desensitized liquid nitroglycerin or diethylene glycol dinitrate, may also transport the tools and supplies necessary for preparing and firing charges thereof: *Provided,* That such tools and supplies be properly secured in place so as to prevent their coming in contact with the body above specified.

(m) *Caps or other explosives.* Any explosives, including desensitized liquid explosives as defined in § 73.53 (e) of this chapter, other than liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate, transported on any motor vehicle transporting liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate, shall be segregated; each kind from every other kind, and from tools or other supplies. Any percussion caps, detonators, blasting caps, or electric blasting caps, shall be carried either in a cloth container having individual pockets for each such cap, or by at least equally safe means. No greater number of any such caps shall be carried in the manner described than is necessary for use on any particular trip.

**§ 77.836 Nonexplosive material.**

(a) No restrictions are prescribed in Parts 71–78 of this chapter for the packing, handling, and transportation of material relating to ammunition for cannon, but containing no explosive or other dangerous article, such as cartridge cases, "dummy" or "drill" cartridges, etc., sand-loaded projectiles, sand-loaded bombs, empty projectiles, empty mines, empty bombs, solid projectiles, or empty torpedoes. Rotating bands should be protected against deformation by method of packing or loading.

**§ 77.837 Flammable liquids.**

(See also § 77.834 (a) to (k).)

(a) *Engine stopped.* Unless the engine of the motor vehicle is to be used for the operation of a pump, no flammable liquid shall be loaded into or on or unloaded from any other motor vehicle than a tank motor vehicle with the engine running; and in any event care should be exercised to prevent ignition of the vapors from any such liquid.

(b) *Bonding or grounding containers prior to and during transfers.* For containers which are not in metallic contact with each other, either metallic bonds or ground conductors shall be provided for the neutralization of possible static charges prior to and during transfers of flammable liquids between such containers. Such bonding shall be made by first connecting an electric conductor to the container to be filled and subsequently connecting the conductor to the container from which the liquid is to come, and not in any other order. To provide against ignition of vapors by discharge of static electricity, the latter connection shall be made at a point well removed from the opening from which the flammable liquid is to be discharged.

(c) Tanks complying with ICC–106A or ICC–110 (§ 78.275 or 78.293 of this chapter) specifications used for the transportation of flammable liquids as authorized in §§ 73.134 (a) (2) and 73.148 (a) (4) of this chapter may be transported in or on motor vehicles and in the manner authorized in § 77.840 (c), provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting.

**§ 77.838 Flammable solids and oxidizing materials.**

(See also § 77.834(a) to (k).)

(a) *Lading within body or covered; tailgate closed; pick-up and delivery.* All of that portion of the lading of any motor vehicle transporting flammable solids or oxidizing materials shall be contained entirely within the body of the motor vehicle and shall be covered by such body, by tarpaulins, or other suitable means, and if such motor vehicle has a tailboard or tailgate, it shall be closed and secured in place during such transportation: *Provided, however,* That the provisions of this paragraph need not apply to "pick-up and delivery" motor vehicles when such motor vehicles are used in no other transportation than in and about cities, towns, or villages.

(b) *Articles to be kept dry.* Special care shall be taken in the loading of any motor vehicle with flammable solids or oxidizing materials which are likely to become hazardous to transport when wet, to keep them from being wetted during the loading process and to keep them dry during transit. Special care shall also be taken in the loading of any motor vehicle with flammable solids or oxidizing materials, which are likely to become more hazardous to transport by wetting, to keep them from being wetted during the loading process and to keep them dry during transit. Examples of such dangerous materials are charcoal screenings, ground, crushed, or pulverized charcoal, and lump charcoal.

(c) *Lading ventilation, precautions against spontaneous combustion.* Whenever a motor carrier has knowledge concerning the hazards of spontaneous combustion or heating of any article to be loaded on a motor vehicle, such article shall be so loaded as to afford sufficient ventilation of the load to provide reasonable assurance against fire from this cause; and in such a case the motor vehicle shall be unloaded as soon as practicable after reaching its destination. Charcoal screenings, or ground, crushed, granulated, or pulverized charcoal, in bags, shall be so loaded that the bags are laid horizontally in the motor vehicle, and so piled that there will be spaces for effective air circulation, which spaces shall not be less than 4 inches wide; and air spaces shall be maintained between rows of bags. Bags shall not be piled closer than 6 inches from the top of any motor vehicle with a closed body.

(d) *Loose or baled nitrate of soda bags.* Loose or baled unwashed, empty bags, having contained nitrate of soda, may be transported in truckload lots only in motor vehicles, and such motor vehicles must have closed or covered bodies lined with paper; such shipments are required to be loaded by the shipper and to be unloaded by the consignee.

(e) *Staying or blocking of packages of matches.* Special care shall be exercised in the loading of packages containing "strike-anywhere" matches to prevent the shifting or jamming of any such package during transit. To this end, the packages shall be compactly loaded with the strongest dimensions of each box or other container loaded lengthwise of the motor vehicle.

(1) *Smooth vehicle interior for matches.* Unless strike-anywhere matches are contained in wooden outside boxes, special care shall be taken to provide that the inside surfaces of any motor vehicle into which such matches are to be loaded and with which surfaces the containers might come in contact, shall be smooth, without protrusions of any sort, such as bolts, nuts, sharp edges, or corners, etc., and there shall be provided for this purpose smooth wooden inner linings, if the interior of the motor vehicle is not otherwise smooth in accordance with this requirement.

(2) *Matches not loaded next to red label articles.* Matches of whatever character shall not be loaded next to packages protected by the red caution label.

(f) Nitrates, except ammonium nitrate having organic coating, listed in § 73.182 (b) must be loaded in closed or open type motor vehicles, which must be swept clean and be free of any projections capable of injuring bags when so packaged. When shipped in open type motor vehicles, the lading must be suitably covered. Ammonium nitrate having organic coating must not be loaded in all-metal vehicles, other than those made of aluminum or aluminum alloys, of the closed type. (See § 77.823 (a) (4) and (5).)

(g) Smokeless powder for small arms in quantities not exceeding 100 pounds net weight in one motor vehicle shall be classed as a flammable solid for purposes of transportation when approved for such classification by the Bureau of Explosives. Maximum quantity in any inside container must not exceed eight pounds and inside containers must be arranged and protected so as to prevent simultaneous ignition of the contents. The complete package must be a type approved by the Bureau of Explosives. Each outside shipping container shall be labeled as prescribed in § 73.402 (a) (2) of this chapter.

**§ 77.839 Corrosive liquids.**

(See also § 77.834 (a) to (k).)

(a) *Nitric acid.* In addition to the requirements set forth in paragraph (b) of this section no carboy or other container of nitric acid shall be loaded above any container containing any other kind of material. The loading of carboys or other containers of nitric acid shall be limited to two tiers high.

(b) *Carboys and frangible containers.* In general, individual carboys and frangible containers of acids or other corrosive liquids, including charged electric storage batteries, shall, when loaded by hand, be individually loaded into and unloaded from any motor vehicle in which they are to be, or have been, transported. All reasonable precautions shall be taken to prevent, by all practicable means, the dropping of any such containers or batteries containing corrosive liquids. No such container or battery shall be loaded into a motor vehicle having an uneven floor surface. It shall be permissible to load on or transport in any motor vehicle any authorized carboys or frangible shipping containers, containing acids or other corrosive liquids, more than one tier high above any floor only if such carboys or other containers are boxed or crated, or are in barrels or kegs, as required by Parts 71–78 of this chapter, and only if such containers are so stacked that the weight of each tier above the first is entirely supported by the boxes, crates, barrels, kegs, or other authorized means of enclosing the carboys or frangible containers. Only so many tiers as may adequately be so supported without danger of crushing or breaking, shall be permitted. Means shall be provided to prevent by all practicable means, in all cases, the shifting of containers or batteries during transit. Nothing contained in this section shall be so construed as to prevent the use of cleats or other retaining means for the purpose of preventing shifting of containers or batteries. For the purposes of this section a false floor or platform, secured against relative motion within

the body of the motor vehicle, shall be deemed to be a floor. (For recommendations for handling leaking or broken packages, see § 77.858 (a).)

(c) *Storage batteries.* In addition to the requirements set forth in paragraph (b) of this section, all storage batteries containing any electrolyte shall be so loaded, if loaded with other lading, that all such batteries will be protected against other lading falling onto or against them; and adequate means shall be provided in all cases for the protection and insulation of battery terminals against short circuits.

(d) Tanks complying with ICC–106A (§ 78.275 of this chapter) specification used for the transportation of corrosive liquids as authorized in § 73.264(b)(6) of this chapter may be transported in or on motor vehicles and in the manner authorized in § 77.840(c), provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting.

§ 77.840 Compressed gases.

(See also § 77.834 (a) to (k.)

(a) *Floors or platforms essentially flat.* Cylinders containing compressed gases shall not be loaded onto any part of the floor or platform of any motor vehicle which is not essentially flat; cylinders containing compressed gases may be loaded onto any motor vehicle not having a floor or platform only if such motor vehicle be equipped with suitable racks having adequate means for securing such cylinders in place therein. Nothing contained in this section shall be so construed as to prohibit the loading of such cylinders on any motor vehicle having a floor or platform and racks as hereinbefore described.

(1) *Cylinders.* Cylinders containing compressed gases shall be securely lashed in an upright position so as to prevent their overturning; or loaded into racks securely attached to the motor vehicle; or packed in boxes or crates of such dimensions as to prevent their overturning; or loaded in a horizontal position. Spec. ICC–4L cylinders must be loaded in an upright position and be securely braced.

(b) Portable tank containers containing compressed gases shall be loaded on motor vehicles only as follows:

(1) Onto a flat floor or platform of a motor vehicle.

(2) Onto a suitable frame of a motor vehicle.

(3) In either such case, such containers shall be safely and securely blocked or held down to prevent movement relative to each other or to the supporting structure when in transit, particularly during sudden starts and stops and changes of direction of the vehicle.

(4) Requirements of subparagraphs (1) and (2) of this paragraph shall not be construed as prohibiting stacking of containers, provided the provisions of subparagraph (3) of this paragraph are fully complied with.

(c) Tanks complying with ICC–106A or ICC–110A (§ 78.275, 78.276, 78.278, 78.293 or 78.295 of this chapter) specifications used for the transportation of compressed gases as authorized in § 73.314(a), Note 12 of this chapter, may be transported in a combination of vehicles as follows: (1) in or on a truck and in or on one semi-trailer or one full trailer attached thereto, with no other trailer included in the combination, (2) in or on a semi-trailer attached to a truck-tractor and in or on a full trailer attached thereto, with not more than one semi-trailer and one full trailer in the combination, provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting. As used herein a full trailer includes a semi-trailer equipped with a front axle dolly. Each full trailer used in any of the above combinations, in or on any vehicle of which combination any such tank is transported, must have a wheel base of at least 184 inches. See § 74.560 of this chapter for rail-freight-motor vehicle shipments.

(d) *Engine to be stopped in tank motor vehicles, except for transfer pump.* No flammable compressed gas shall be loaded into or on or unloaded from any tank motor vehicle with the engine running unless the engine is used for the operation of the transfer pump of the vehicle. Unless the delivery hose is equipped with a shut-off valve at its discharge end, the engine of the motor vehicle shall be stopped at the finish of such loading or unloading operation while the filling or discharge connections are disconnected.

(e) Chlorine cargo tanks shall be shipped only when equipped (1) with a gas mask of a type approved by the U.S. Bureau of Mines for chlorine service; (2) with an emergency kit for controlling leaks in fittings on the dome cover plate.

(f) No chlorine tank motor vehicle used for transportation of chlorine shall be moved, coupled or uncoupled, when any loading or unloading connections are attached to the vehicle, nor shall any semi-trailer or trailer be left without the power unit unless such semi-trailer or trailer be checked or equivalent means be provided to prevent motion.

§ 77.841 Poisons.

(See also § 77.834 (a) to (k).)

(a) *Arsenical compounds in bulk.* Care shall be exercised in the loading and unloading of "arsenical dust", "arsenic trioxide", and "sodium arsenate", allowable to be loaded into sift-proof, steel hopper-type or dump-type motor-vehicle bodies equipped with water-proof, dust-proof covers well secured in place on all openings, to accomplish such loading with the minimum spread of such compounds into the atmosphere by all means that are practicable; and no such loading or unloading shall be done near or adjacent to any place where there are or are likely to be, during the loading or unloading process assemblages of persons other than those engaged in the loading or unloading process, or upon any public highway or in any public place.

(b) *No class A or class C poisons in cargo tanks.* No dangerous poison, class A, or any tear gas or irritating substance, class C, may be loaded into or transported in any cargo tank.

(c) *Class A or class C poisons.* It shall not be permissible to transport class A or class C poisons if there be any interconnecting means of any character between the containers.

NOTE 1: Tanks complying with ICC–106A (§ 78.275 or 78.276 of this chapter) specification containing class A or B poisons as authorized in §§ 73.333(a)(2), 73.336(a)(3), 73.338(a)(3), 73.353(a)(5) and 73.357(b)(4) of this chapter may be transported in or on motor vehicles and in the manner authorized in § 77.840(c), provided adequate facilities are present for handling tanks where transfer in transit is necessary. Tanks must be securely chocked or clamped thereon to prevent shifting.

(d) *Radioactive material.* A container of radioactive material, red label, must not be placed in vehicles, terminals, or other places closer than 3 feet to an area which may be continuously occupied by passengers, employees, or shipments of animals. When more than one such container is present, the distance from occupied areas must be computed from the table in subparagraph (1) of this paragraph by adding the number of units shown on labels on the containers.

(1) A container of radioactive material, red label, must not be placed closer than 15 feet to any package containing undeveloped film. If more than one such container is present the distance must be computed from the table in this subparagraph by adding the number of units shown on the labels on the packages.

TABLE

| Total number of units | Minimum distance in feet to nearest undeveloped film | Distance in feet to area that may be continuously occupied by passengers or employes for periods: | |
|---|---|---|---|
| | | Up to 8 hours | Exceeding 8 hours |
| 1 to 10 | 15 | 3 | 5 |
| 11 to 20 | 20 | 4 | 7 |
| 21 to 30 | 25 | 5 | 9 |
| 31 to 40 | 30 | 6 | 10 |

NOTE 1. The distance in the table must be measured from the nearest point of the radioactive container or containers.

NOTE 2. 1 unit equals 1 milliroentgen per hour at 1 meter for hard gamma radiation or the amount of radiation which has the same effect on film as 1 mrhm. of hard gamma rays of radium filtered by ½ inch of lead.

(2) Not more than 40 units of radioactive material, red label, shall be transported in any vehicle or stored in any location at one time. Packages must be so blocked or braced in vehicles as to prevent any shift of lading under conditions normally incident to transportation.

(3) All containers of radioactive material, red label, must be carried by the handles when handles are provided.

(4) Radioactive materials (class D poisons) must not be loaded in the same vehicle with Class A explosives.

(5) If for any reason, a package containing radioactive materials, red label, would otherwise remain in the same building for a period longer than 24 hours, it must be moved to a different location after each 24 hours.

NOTE 1: The requirements of this paragraph shall not apply to magnesium-thorium alloy materials or uranium, normal or depleted, described in § 73.392 (e) and (f) of this chapter. The location of bundles, boxes, barrels, or crates of such material from packages of undeveloped film must be as stated on the label (see § 73.414(d) of this chapter).

## Subpart C—Loading and Storage Chart of Explosives and Other Dangerous Articles

### § 77.848 Loading and storage chart of explosives and other dangerous articles.

(a) Explosives or other dangerous articles must not be loaded, transported or stored together, except as provided in the Loading and Storage Chart of Explosives and Other Dangerous Articles shown in this section.

The following table shows the explosives and other dangerous articles which must not be loaded or stored together.

The letter X at an intersection of horizontal and vertical columns shows that these articles must not be loaded or stored together, for example: Detonating fuzes class A, with or without radioactive components g horizontal column must not be loaded or stored with high explosives or propellant explosives, class A b vertical column.

| | | a | b | c | d | e | f | g | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Low explosives or black powder | High explosives or propellant explosives, class A | Initiating or priming explosives, wet: Diazodinitrophenol, fulminate of mercury, guanyl nitrosamino guanylidene hydrazine, lead azide, lead styphnate, nitro mannite, nitrosoguanidine, pentaerythrite tetranitrate, tetrazene, lead mononitroresocrcinate | Blasting caps, with or without safety fuse (including electric blasting caps), detonating primers | Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shell, ammunition for small arms with explosive bullets, or ammunition for small arms with explosive projectiles, or rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles; and boosters (explosive), bursters (explosive), or supplementary charges (explosive) without detonators • f | Explosive projectiles, bombs, torpedoes, or mines, rifle or hand grenades (explosive), jet thrust units (jato), explosive, class A or igniters, jet thrust (jato), explosive, class A • | Detonating fuzes, class A, with or without radioactive components | Ammunition for cannon with empty, inert-loaded or solid projectiles, or without projectiles, or rocket ammunition with empty projectiles, inert-loaded or solid projectiles or without projectiles | Propellant explosives, class B, jet thrust units (jato), class B, igniters, jet thrust (jato), class B, or starter cartridges, jet engines, class B | Fireworks special or railway torpedoes | Small arms ammunition | Primers for cannon or small arms, empty cartridge bags—black powder igniters, empty cartridge cases, primed, empty grenades, primed, combination primers or percussion caps, toy caps, explosive cable cutters, explosive rivets | Percussion fuzes, tracer fuzes or tracers | Time, combination or detonating fuzes, class C | Cordeau detonant fuse, safety squibs, fuse lighters, fuse igniters, delay electric igniters, electric squibs, instantaneous fuse or igniter cord | Fireworks, common, highway fusees or railway fusees | Flammable liquids or compressed flammable gases, red label | Flammable solids or oxidizing materials, yellow label | Acids or corrosive liquids, white label | Compressed nonflammable gases, green label | Poisonous gases or liquids, in tank car tanks, cylinders, projectiles or bombs, poison gas label | Radioactive materials (class D poisons) |
| **CLASS A EXPLOSIVES** | | | | | | | | | | | | | | | | | | | | | | | |
| Low explosives or black powder | (a) | | | X | | | | | | | X | | | | | | X | X | X | X | X | X | X |
| High explosives or propellant explosives, class A | (b) | | | X | •X | | | X | | | X | | | | | | X | X | •X | X | X | X | X |
| Initiating or priming explosives, wet: Diazodinitrophenol, fulminate of mercury, guanyl nitrosamino guanylidene hydrazine, lead azide, lead styphnate, nitro mannite, nitrosoguanidine pentaerythrite tetranitrate, tetrazene, lead mononitroresocrcinate | (c) | X | •X | | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| Blasting caps, with or without safety fuse (including electric blasting caps), detonating primers | (d) | | X | X | | X | X | | | | •X | | | | | | •X | •X | ••X | •X | •X | X | X |
| Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shell ammunition for small arms with explosive bullets, or ammunition for small arms with explosive projectiles, or rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles; and boosters (explosive), bursters (explosive), or supplementary charges (explosive) without detonators • d | (e) | | | X | X | | | X | | | X | | | | | | X | X | X | X | X | X | X |
| Explosive projectiles, bombs, torpedoes, or mines, rifle or hand grenades (explosive), jet thrust units (jato), explosive, class A, or igniters, jet thrust (jato), explosive, class A • | (f) | | | X | X | | | X | | | X | | | | | | X | X | X | X | X | X | X |
| Detonating fuzes, class A, with or without radioactive components | (g) | | X | X | | X | X | | | | X | | | | | | X | X | X | X | X | X | X |
| **CLASS B EXPLOSIVES** | | | | | | | | | | | | | | | | | | | | | | | |
| Ammunition for cannon with empty, inert-loaded or solid projectiles, or without projectiles, or rocket ammunition with empty projectiles, inert-loaded or solid projectiles or without projectiles | 1 | | | X | | | | | | | | | | | | | | | | •X | | X | |
| "2" Propellant explosives, class B, jet thrust units (jato), class B, igniters, jet thrust (jato), class B, or starter cartridges, jet engine, class B | 2 | | | X | | | | | | | | | | | | | | | | •X | | X | |
| Fireworks, special or railway torpedoes | 3 | X | X | X | •X | X | X | X | | | | | | | | | | | | | | X | |

See footnotes at end of table.

The following table shows the explosives and other dangerous articles which must not be loaded or stored together.

The letter X at an intersection of horizontal and vertical columns shows that these articles must not be loaded or stored together, for example: Detonating fuzes class A, with or without radioactive components g horizontal column must not be loaded or stored with high explosives or propellant explosives, class A b vertical column.

| | | Low explosives or black powder | High explosives or propellant explosives, class A | Initiating or priming explosives, wet: Diazodinitrophenol, fulminate of mercury, guanyl nitrosamino guanylidene hydrazine, lead azide, lead styphnate, nitro mannite, nitroguanidine, pentaerythrite tetranitrate, tetrazene, lead mononitroresorcinate. | Blasting caps, with or without safety fuse (including electric blasting caps), detonating primers | Ammunition for cannon with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles or shell, ammunition for small arms with explosive bullets, or ammunition for small arms with explosive projectiles, or rocket ammunition with explosive projectiles, gas projectiles, smoke projectiles, incendiary projectiles, illuminating projectiles; and boosters (explosive), bursters (explosive), or supplementary charges (explosive) without detonators • / | Explosive projectiles, bombs, torpedoes, or mines, rifle or hand grenades (explosive), jet thrust units (jato), explosive, class A or igniters, jet thrust (jato), explosive, class A • | Detonating fuze, class A, with or without radioactive components | Ammunition for cannon with empty, inert-loaded or solid projectiles, or without projectiles, or rocket ammunition with empty projectiles, inert-loaded or solid projectiles or without projectiles | Propellant explosives, class B, jet thrust units (jato), class B; igniters, jet thrust (jato), class B, or starter cartridges, jet engines, class B | Fireworks, special or railway torpedoes | Small arms ammunition | Primers for cannon or small arms, empty cartridge bags—black powder igniters, empty cartridge cases, primed, empty grenades, primed, combination primers or percussion caps, toy caps, explosive rivets | Percussion fuzes, tracer fuzes or tracers | Time, combination or detonating fuzes, class C | Cordeau detonant fuse, safety squibs, fuse lighters, fuse igniters, delay electric igniters, electric squibs, instantaneous fuse or igniter cord | Fireworks, common, highway fuses or railway fuses | Flammable liquids or compressed flammable gases, red label | Flammable solids or oxidizing materials, yellow label | Acids or corrosive liquids, white label | Compressed nonflammable gases, green label | Poisonous gases or liquids in tank car tanks, cylinders, projectiles or bombs, poison gas label | Radioactive materials (class D poisons) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | a | b | c | d | e | f | g | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| CLASS C EXPLOSIVES | | | | | | | | | | | | | | | | | | | | | | | |
| Small arms ammunition | 4 | | | X | | | | | | | | | | | | | | | | | | | |
| Primers for cannon or small arms, empty cartridge bags—black powder igniters, empty cartridge cases, primed, empty grenades, primed, combination primers or percussion caps, toy caps, explosive cable cutters, explosive rivets | 5 | | | X | | | | | | | | | | | | | | | | | | | |
| Percussion fuzes, tracer fuzes or tracers | 6 | | | X | | | | | | | | | | | | | | | | | | | |
| Time, combination or detonating fuzes, class C | 7 | | | X | | | | | | | | | | | | | | | | | | | |
| Cordeau detonant fuse, safety squibs, fuse lighters, fuse igniters, delay electric igniters, electric squibs, instantaneous fuse or igniter cord | 8 | | | X | | | | | | | | | | | | | | | | | | | |
| Fireworks, common, highway fusees or railway fusees | 9 | X | X | X | •X | X | X | X | | | | | | | | | | | | | | X | |
| OTHER DANGEROUS ARTICLES | | | | | | | | | | | | | | | | | | | | | | | |
| Flammable liquids or compressed flammable gases, red label | 10 | X | X | X | •X | X | X | X | | | | | | | | | | | | | | X | |
| Flammable solids or oxidizing materials, yellow label | 11 | X | •X | X | ••X | X | X | X | | | | | | | | | | | | | | X | |
| Acids or corrosive liquids, white label | 12 | X | X | X | •X | X | X | X | ▸X | ▸X | | | | | | | | | ▸X | | | X | |
| Compressed nonflammable gases, green label | 13 | X | X | X | •X | X | X | X | | | | | | | | | | | | | | | |
| Poisonous gases or liquids in tank car tanks, cylinders, projectiles or bombs, poison gas label | 14 | X | X | X | X | X | X | X | X | X | X | | | | | | X | X | X | X | | | |
| Radioactive materials class D (poisons) | 15 | X | X | X | X | X | X | X | | | | | | | | | | | | | | | |

• Blasting caps or electric blasting caps in quantities not exceeding 1,000 caps may also be loaded and transported with articles named in vertical and horizontal columns 3, 9, 10, 11, 12, and 13. Loading and transportation of blasting caps or electric blasting caps except as prescribed in § 77.835, in any quantity, with articles named in vertical or horizontal columns b, c, 3, or f is prohibited.

▸ Acid or other corrosive liquids, white label, must not be loaded above or adjacent to flammable solids or oxidizing materials, yellow label, ammunition for cannon with or without projectiles, or propellant explosive, except that shippers loading truckload shipments of white label and yellow label packages and who have obtained prior approval from the Bureau of Explosives may load such articles together when it is known that the mixture of contents would not cause a dangerous evolution of heat or gas.

◦ Explosives, class A, and explosives, class B, other than ammunition, must not be loaded or stored with chemical ammunition containing incendiary charges or white phosphorus either with or without bursting charges. Chemical ammunition containing incendiary charges or white phosphorus may be loaded and stored with other ammunition of the same classification.

/ Bursters (explosive), boosters (explosive), or supplementary charges (explosive) without detonators when shipped by, to or for the Departments of the Army, Navy, and Air Force of the United States Government may be loaded with any of the articles named except those in columns c, d, 3, 9, 10, 11, 12, 13, 14, and 15.

• Does not include nitro carbo nitrate or ammonium nitrate, fertilizer grade, which may be loaded, transported or stored with high explosives or with blasting caps or electric blasting caps, and detonating primers.

NOTE 1: Charged electric storage batteries must not be loaded in the same vehicle with explosives, class A.

NOTE 2: Cyanides or cyanide mixtures must not be loaded or stored with acids or corrosive liquids.

NOTE 3: Gas identification sets may be loaded and transported with all articles named except those in column c.

NOTE 4: Nitric acid, when loaded in the same motor vehicle with other acids or other corrosive liquids in carboys, must be separated from the other carboys. A 2 by 6 inch plank, set on edge, should be nailed across the motor vehicle floor at least 12 inches from the nitric acid carboys, and the space between the plank and the carboys of nitric acid should be filled with sand, sifted ashes, or other incombustible absorbent material.

NOTE 5: Smokeless powder for small arms in quantities not exceeding 100 pounds net weight in one motor vehicle shall be classed as a flammable solid for purposes of transportation when approved for such classification by the Bureau of Explosives.

## Subpart D—Vehicles and Shipments in Transit; Accidents

NOTE: See § 77.807 for emergency shipments.

### § 77.853 Transportation and delivery of shipments.

(a) *No unnecessary delay in movement of shipments.* All shipments of explosives or other dangerous articles shall be transported without unnecessary delay, from and including the time of commencement of the loading of the cargo until its final discharge at destination.

(b) *Delivery at destination.* Shipments of explosives and other dangerous articles which are refused by the consignees, or which can not be delivered within 48 hours after arrival at destination, must be promptly disposed of (1) by return to the shipper, if in proper shipping condition, or (2) by storage, provided a suitable storage place for such articles is available, or (3) by sale, or (4) when necessary to safety, by destruction: *Provided,* That charged electric batteries may be held for 30 days after arrival at destination, pending delivery or disposition.

(c) *Delivery to authorized person, or magazine.* Every shipment of dangerous explosives by motor vehicle shall be delivered only to someone authorized to receive it, except such explosives shipments as are placed in magazines which are immediately thereafter locked.

### § 77.854 Disabled vehicles and broken or leaking packages; repairs.

(See also Forbidden articles, § 77.821)

(a) *Care of lading, explosives or other dangerous articles.* Whenever for any cause other than necessary traffic stops any motor vehicle transporting any explosive or other dangerous article is stopped upon the traveled portion of any highway or shoulder thereof, special care shall be taken to guard the vehicle and its load or to take such steps as may be necessary to provide against hazard. Special effort shall be made to remove the motor vehicle to a place where the hazards of the materials being transported may be provided against. See §§ 192.22 to 192.26 inclusive, of this chapter, for signals required to be displayed on the highway.

(b) *Disposition of containers found broken or leaking in transit.* When leaks occur in packages or containers during the course of transportation, subsequent to initial loading, disposition of such package or container shall be made by the safest practical means afforded under paragraphs (c), (d), and (e) of this section.

(c) *Repairing packages.* Packages may be repaired when safe and practicable, such repairing to be in accordance with the best and safest practice known and available.

(d) *Transportation of repaired packages.* Any package repaired in accordance with the requirements of paragraph (c) of this section, except as provided in §§ 77.855 (c), 77.856 (c), and 77.858 (b), may be transported to the nearest place at which it may safely be disposed of only in compliance with the following requirements:

(1) The package must be safe for transportation.

(2) The repair of the package must be adequate to prevent contamination of or hazardous admixture with other lading transported on the same motor vehicle therewith.

(3) If the carrier is not himself the shipper, the consignee's name and address must be plainly marked on the repaired package.

(e) *Disposition of unsafe broken packages.* In the event any leaking package or container cannot be safely and adequately repaired for transportation or transported, it shall be stored pending proper disposition in the safest and most expeditious manner possible.

(f) *Stopped vehicles; other dangerous articles.* Whenever any motor vehicle transporting flammable liquids, flammable solids, oxidizing materials, corrosive liquids, compressed gases, or poisons, is stopped for any cause other than necessary traffic stops upon the traveled portion of any highway, or a shoulder next thereto, the following requirements shall be complied with during the period of such stop:

(1) For motor vehicles other than cargo tank motor vehicles used for the transportation of flammable liquids or flammable compressed gases and not transporting explosives, class A or class B, flares (pot torches), fusees, red electric lanterns, red emergency reflectors, and red flags shall be displayed as required under §§ 192.22, 192.23, 192.24, and 192.26 of this chapter.

(2) For cargo tank motor vehicles used for the transportation of flammable liquids or flammable compressed gases, whether loaded or empty, and vehicles transporting explosives class A or class B, red electric lanterns, red emergency reflectors and red flags shall be displayed as required in §§ 192.25 and 192.26 of this chapter.

(g) *Repairs to disabled vehicles.* No repairs shall be made on any motor vehicle containing explosives or other dangerous articles except in case such repairs may be made without hazard; nor shall any such loaded motor vehicle be repaired in a closed garage.

(h) *No repair with flame unless gas-free.* No repair of a cargo tank used for the transportation of any flammable liquid or poisonous liquid, or any compartment thereof, or of any container for fuel of whatever nature, may be repaired by any method employing a flame, arc, or other means of welding, unless the tank or compartment shall first have been made gas-free.

### § 77.855 Accidents; explosives.

(a) *Vehicle disabled; warning of nearby persons; removal of explosives.* In the event of an accident involving any motor vehicle transporting any explosives, every available means shall be employed to prevent individuals, other than those employed in the protection of persons or property or in the removal of hazards or wreckage, from congregating in the vicinity; such means shall also be employed to prevent smoking, to keep flame away, and to safeguard against the aggravation of the hazard present, and to warn other users of the highway. In the event that any motor vehicle laden with or carrying dangerous explosives is entangled with another or with any other object or structure, following an accident, no attempt shall be made to disentangle either vehicle, or the laden vehicle from the object or structure, until the lading, together with any fragments thereof, be removed to a place at least 200 feet from the vehicle (and preferably 200 feet from any habitation). In the event of fire, involving a motor vehicle laden with any explosive, every practicable effort shall be made to give warning of danger of explosion to habitants in the vicinity and to other users of the highway.

(b) *Disposition of spilled or leaking explosives.* In the event of any accident involving any motor vehicle transporting any explosive in which packages are broken, all unbroken packages and as much of any broken packages as possible shall be carefully gathered and removed to a place of safety, in order to prevent fire or explosion. In clearing any wreck in which a motor vehicle containing any explosive is involved, care shall be exercised not to produce sparks with tools or by other means in moving of or working about the wreckage, so as to avoid as far as possible fires or explosions.

(c) *Explosives packages in transit capable of repair.* Any package of explosives found injured or broken in transit may be repaired or recoopered when this is evidently practicable and not dangerous. When a box that contains any explosive is so damaged that it cannot be repaired it should be reinforced by stout wrapping paper and twine, placed in another strong box, and surrounded by dry, fine sawdust, or dry and clean cotton waste, or elastic wads made from dry newspapers. The box cover should then be securely attached. A ruptured can or keg should be inclosed in a grain bag of good quality, and boxed. Injured packages thus protected, and properly marked with name of contents and consignee's name and address, may be carried to destination: *Provided, however,* That the motor carrier, if himself the shipper, need not mark his own name and address on the package.

(d) *Liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate.* When any liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate has been spilled on any portion of any motor vehicle it shall be washed with a suitable neutralizing agent until all of any such spillage shall have become completely neutralized.

NOTE 1: Liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate may be destroyed by use of a solution composed of:

| | |
|---|---|
| 60 percent commercial sodium sulfide | 1 ounce. |
| Denatured alcohol | 7½ fluid ounces. |
| Acetone | 2 fluid ounces. |
| Water | 3 fluid ounces. |

(e) *Explosives other than liquid nitroglycerin, desensitized liquid nitroglycerin*

*or diethylene glycol dinitrate.* When particles of any explosive composition other than liquid nitroglycerin, desensitized liquid nitroglycerin or diethylene glycol dinitrate have escaped from a damaged container to the floor of the body of the carrier's motor vehicle, the floor shall be thoroughly swept and any absorbed portion removed.

(f) *Unrepairable explosives packages.* When any package of explosives in transit is found to be leaking or damaged and cannot be recoopered, it may not be transported beyond the minimum distance necessary to reach a place where the explosive may be disposed of with safety, except as provided in § 77.854 (e) and paragraph (c) of this section.

**§ 77.856 Accidents; flammable liquids.**

(a) *Accident to vehicle; warnings; no sparks or flame.* In the event of an accident involving any motor vehicle transporting any flammable liquid every available means shall be employed to prevent individuals, other than those employed in the protection of persons or property or in the removal of hazards or wreckage, from congregating in the vicinity; such means shall also be employed to prevent smoking, to keep fires or flame away, to safeguard against the hazard present, and to warn other users of the highway. (See also § 77.-814.)

(b) *Prevent leakage from spreading.* Whenever any flammable liquid is escaping from a container, all practical means shall be taken to prevent such liquid from spreading over a wide area, from flowing into sewers and streams, and from becoming ignited.

(c) *Disposition of contents of cargo tank when unsafe to continue.* In the event of a leak in a cargo tank of such a character as to make further transportation unsafe, the leaking vehicle should be removed from the traveled portion of the highway; and every available means employed for the safe disposal of the leaking liquid by preventing, so far as practicable, its spread over a wide area, such as by digging trenches to drain to a hole or depression in the ground, diverting the liquid away from streams or sewers if possible, or catching the liquid in containers if practicable. Smoking and the lighting of cigarettes, cigars, or pipes in the vicinity is prohibited, and fires or flames in the vicinity of the leaking cargo tank must be extinguished.

(d) *Transfer of flammable liquids en route.* No flammable liquid shall be transferred from one container to another, or from one motor vehicle to another vehicle, or from another vehicle to a motor vehicle, on any public highway, street, or road, except in case of emergency. In such cases red electric lanterns, red emergency reflectors, or red flags shall be set out in the manner prescribed for disabled or stopped motor vehicles. (See Motor Carrier Safety Regulations, Part 192 of this chapter.) In any event, all practicable means, in addition to those hereinbefore prescribed, shall be taken to protect and warn other users of the highway against the hazard involved in any such transfer, or against the hazard occasioned by the emergency making such transfer necessary. Nothing contained in this rule shall be so construed as to prohibit the fueling of machinery or vehicles used in road construction and maintenance.

(e) *Transportation of leaking cargo tanks.* A leaking cargo tank may only be transported the minimum distance necessary to reach a place where the contents of the tank or compartment may be disposed of with safety. Every available means must be utilized to prevent the leakage or spillage of the liquid upon the highway.

**§ 77.857 Accidents; flammable solids and oxidizing materials.**

(a) *Dangerous articles spilled; warning of nearby persons.* In the event of any accident involving any motor vehicle in which any flammable solid or oxidizing material may have become spilled, every practicable and available means shall be taken to warn all approaching persons of the hazard of fire.

(b) *Prevent spread of fire where possible.* Care shall be exercised in the event of damage to packages of flammable solids or oxidizing materials which either have been or may be on fire, to limit the spread of the fire.

(c) *Disposition of spilled or leaking materials.* In the event of any accident involving any motor vehicle transporting any flammable solid or oxidizing material in which packages are broken, as much as possible of any broken packages shall be carefully gathered and removed to a place of safety, and if the removal of unbroken packages from the motor vehicle would decrease the hazard of fire or other hazard, they shall be removed. The handling of any such materials not contained in packages shall be such as to promote the greatest safety to other users of the highway.

(d) *Reloading of damaged packages of matches; repairs.* In the event of damage to matches or packages of matches by fire or by water in extinguishing a fire in transit, they shall be reloaded in accordance with the applicable requirements for the packing and loading of matches. Great care shall be taken, however, first to examine and repair any damage to outside containers before reloading, and all loose matches shall be destroyed. Smoking boxes of matches shall not be opened in the vicinity of the remainder of the lading. Such boxes shall be destroyed at a safe distance from the motor vehicle, preferably by burning, and shall not be left, either smoking or burning.

(e) *Calcium hypochlorite compounds, dry, involved in fires.* Calcium hypochlorite compounds, dry, packed in metal drums when involved in motor vehicles where fire has occurred from any cause must be held at least five days before forwarding. Drums showing evidence of spontaneous heating or stress from internal pressure must not be reshipped.

**§ 77.858 Accidents; corrosive liquids.**

(a) *Accident to vehicle; other lading damaged; vehicle washed.* In the event of any accident involving any motor vehicle transporting corrosive liquids in which has been involved the breakage, spillage, or leakage of containers of such liquids, care shall be exercised in the handling of any other lading which may have become damaged thereby so as to minimize the hazard in handling such damaged lading during the unloading process; and the interior of any other parts of the motor vehicle upon which the corrosive liquid may have become spilled shall be thoroughly washed with water as soon after the unloading process as feasible and prior, in any event, to the subsequent reloading of the motor vehicle. (See also § 77.814.)

(b) *Leaking cargo tanks.* In the event of leakage of liquid from any cargo tank or any compartment thereof used for the transportation of corrosive liquids, which develops or is discovered subsequent to the commencement of transportation, any one of the following means, or any means in addition to those herein prescribed, equally or more effective, shall be employed to minimize further hazard:

(1) Further to transport the cargo tank only the minimum distance to reach a place where the contents of the tank or compartment which is leaking may be disposed of with safety, meanwhile employing every available means to prevent the spillage or leaking of any liquid on the highway.

(2) In the event the leak is of such a character as to make further transportation of the cargo tank unsafe, to draw off the traveled portion of the highway, and to employ every available means for the safe disposal of the leaking liquid by preventing, so far as practicable, its spread over a wide area, as by absorbing by means of the use of noncombustible absorbent material, such as fine ashes, sand, earth, etc., or by any other practicable means; by digging trenches to drain to a hole or depression in the ground; by diverting the liquid away from streams or sewers if possible; or by catching the liquid in containers if practicable. So far as practicable, every available means shall be employed to prevent the congregation of spectators and to prevent them from coming in contact with the liquid or its fumes. All available means shall be taken to prevent injury or damage to other users of the highway, or to livestock or farm animals, which might be occasioned by the unloading of the corrosive liquid.

**§ 77.859 Accidents; compressed gases.**

(a) *Accident to vehicle; warnings; keep fire away.* In the event of an accident involving any motor vehicle transporting any compressed gas, the release of which would constitute a hazard to other users of the highway, due care shall be taken that only persons employed in the removal of hazards or wreckage shall be allowed in proximity to the motor vehicle, and the shipper should be notified. In such cases, every practicable and available means shall be taken to warn all approaching persons of the danger involved and to caution them against the use of matches or flame-producing devices, if the gas is flammable.

(b) *Transfer of flammable gas en route; no flame or sparks.* No flammable compressed gas shall be transferred from one container to another, or from one tank motor vehicle to another tank vehicle, or from another tank vehicle to

a tank motor vehicle, on any public highway, street, or road, except in case of emergency. In such cases every precaution shall be taken to prevent the escape of gas. Red electric lanterns, red emergency reflectors, or red flags shall be set out in the manner prescribed in Motor Carrier Safety Regulations (Part 192 of this chapter). All cargo tanks involved in such transfer shall be grounded. The transfer shall be made only during daylight, unless the emergency occurs at night or extends into hours of darkness and the hazard would be increased by waiting until daylight. In any such event, all practicable means, in addition to those hereinbefore prescribed, shall be taken to protect and warn other users of the highway against the hazard involved in any such transfer, or against the hazard occasioned by the emergency making such transfer necessary. Every precaution shall be taken to prevent the ignition of any flammable compressed gas from any source; and when it is possible to prevent the congregation of persons not directly concerned with the emergency, this shall be done. Every practicable precaution shall be taken to keep flames or fire away from the scene of the emergency and to prevent smoking or the lighting of pipes, cigars, or cigarettes. Similarly, special care shall be exercised in the operation of any engine, whether of the motor vehicles involved or any other, and where the operation of any such engine would be likely to produce ignition of the flammable compressed gas, the transfer shall be accomplished by other means, if possible. Nothing contained in this section shall be so construed as to prohibit the fueling of machinery or vehicles used in road construction and maintenance.

**§ 77.860 Accidents; poisons.**

(a) *Accident to vehicle; warnings; no sparks of flame.* In the event of an accident involving any motor vehicle transporting any poison which is flammable, noxious, or toxic, every available means shall be employed in the protection of persons or property or in the removal of hazards or wreckage, from congregating in the vicinity; such means shall also be employed to prevent smoking, to keep flame away, to safeguard against the aggravation of the hazard present, and to warn other users of the highway. Care shall also be taken to prevent any poison, whether flammable or nonflammable, from contaminating streams or flowing or being spilled into sewers, and poison in powdered form from being scattered by wind. (See also § 77.814.)

(b) *Leaking cargo tanks.* In the event of leakage of liquid from any cargo tank or any compartment thereof used for the transportation of any poison which is also flammable, or which would come also within the definition of a flammable liquid, or of any gas or combination of gas and liquid, or any poison which would come within the definition of a compressed gas, the requirements shall be the same as those set forth for flammable liquids and compressed gases. In addition, all possible care shall be taken to warn bystanders or other users of the highway against the hazard of inhaling vapors or coming in contact with the poison.

(c) *Radioactive materials; poison D.* In case of accident to vehicle resulting in breakage of, or unusual delay to any shipment of radioactive material the package or material should be segregated as far as possible from human contact. The shipper and the Bureau of Explosives should be immediately notified. In case of breakage of a package containing radioactive material and when it appears likely that the inside container may have been damaged, great care must be exercised to prevent contact with or inhalation of radioactive material by any person.

(d) *Cleaning vehicles.* Any motor vehicle which, after use for the transportation of radioactive materials in truckload lots, is contaminated with such materials to the extent that a survey of the interior surface shows that the beta-gamma radiation is greater than 10 milliroentgens physical equivalent in 24 hours or that the average alpha contamination is greater than 500 disintegrations per minute per 100 square centimeters shall be thoroughly cleaned in such a manner that a resurvey of the interior surface shows the contamination to be below these levels. A certificate to that effect must be furnished the carrier or to the driver of the motor vehicle. Motor vehicles which are used solely for the transportation of radioactive materials are exempt from the provisions of this section.

## Subpart E—Regulations Applying to Explosives or Other Dangerous Articles on Motor Vehicles Carrying Passengers for Hire

**§ 77.870 Regulations for passenger carrying vehicles.**

(a) *Vehicles transporting passengers and property.* In addition to the regulations in Parts 71 to 78 of this chapter the following requirements shall apply to vehicles transporting passengers and property.

(b) *No explosives or other dangerous articles on passenger-carrying vehicles, exceptions.* No explosives or other dangerous articles except small-arms ammunition, emergency shipments of drugs, chemicals and hospital supplies, and the accompanying munitions of war of the Departments of the Army, Navy, and Air Force of the United States Government, are authorized by Parts 71–78 of this chapter to be transported on motor vehicles carrying passengers for hire where other practicable means of transportation is available.

(c) *Explosives in passenger-carrying space forbidden.* No explosive, except small-arms ammunition, may be carried in the passenger-carrying space of any motor vehicle transporting passengers for hire.

(d) *Explosives and other dangerous articles on passenger-carrying vehicles; quantity.* Where no other practicable means of transportation is available the following articles in the quantities as shown may be transported in motor vehicles carrying passengers for hire in a space other than that provided for passengers: Not to exceed 100 pounds gross weight of any or all of the kinds of explosives permitted to be transported by rail express or rail baggage services, may be transported on a motor vehicle transporting passengers: *Provided, however,* That samples of explosives for laboratory examination, not exceeding a net weight of one-half pound each, and not exceeding 20 samples or not to exceed a total of 100 blasting caps at one time in a single motor vehicle, may be transported in a motor vehicle transporting passengers. (See § 72.5 of this chapter.)

(e) *Articles other than explosives on passenger-carrying vehicles.* The gross weight of any given class of dangerous article other than explosives shall not exceed 100 pounds, and the aggregate weight of all such other dangerous articles shall not exceed 500 pounds. This provision does not apply to nontoxic, nonflammable refrigerants, when such refrigerant is for servicing operations of a motor carrier on whose motor vehicles the refrigerant is used. A cylinder secured against movement while in transit and not exceeding 250 pounds gross weight may be transported.

(f) *Poisons on passenger-carrying vehicles.* No motor carrier may transport any extremely dangerous poison, class A, any tear gas or irritating substance, class C, any less dangerous poison, class B, which is a liquid, or any paranitraniline, in any amount, in or on any bus while engaged in the transportation of passengers; or any less dangerous poison, class B, which is other than a liquid, in any amount exceeding an aggregate of 100 pounds gross weight in or on any such bus.

(g) *Radioactive materials on passenger-carrying vehicles.* No motor carrier may transport any radioactive material, poison, class D, requiring red or blue radioactive material label under these regulations in or on any bus while engaged in the transportation of passengers except where no other practicable means of transportation is available. Packages of radioactive materials must be handled and placed in the vehicle in accordance with the requirements of § 77.841 (d).